UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

REGION X

IN THE MATTER OF:	)	ADMINISTRATIVE
	)	SETTLEMENT AGREEMENT
	)	AND ORDER ON CONSENT
	)	FOR REMOVAL ACTION
	)	IMPLEMENTATION
Lower Duwamish Waterway Superfund	)	
Site Jorgensen Forge Early Action Area	)	U.S. EPA Region X
Seattle, Washington,	)	CERCLA Docket No. 10-2013-0032
	)	
Earle M. Jorgensen Company,	)	Proceeding Under Sections 104, 106(a), 107
	)	and 122 of the Comprehensive
	)	Environmental Response, Compensation,
	)	and Liability Act, as amended, 42 U.S.C.
Respondent.	)	§§ 9604, 9606(a), 9607 and 9622.
	)	

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I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Settlement Agreement and Order on Consent (Settlement Agreement) is entered into voluntarily by the United States Environmental Protection Agency, Region X (EPA), and by the Earle M. Jorgensen Company (EMJ) as Respondent. This Settlement Agreement provides for the performance of a non-time-critical removal action (NTCRA) by Respondent and the reimbursement of certain response costs incurred by the United States at or in connection with such action for the Jorgensen Forge Early Action Area (EAA) of the Lower Duwamish Waterway (LDW) Superfund Site (Site or LDW Site) in Seattle, Washington.

2. This Settlement Agreement is issued under the authority vested in the President of the United States by Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622, as amended (CERCLA).

3. EPA has notified the State of Washington Department of Ecology (State or Ecology) of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a). Ecology is co-managing and overseeing cleanup of the LDW Site jointly with EPA, and is providing support for the implementation of this NTCRA at the Jorgensen Forge EAA.

4. EPA and Respondent recognize that this Settlement Agreement has been negotiated in good faith and that the actions undertaken by Respondent in accordance with this Settlement Agreement do not constitute admissions of any liability. Respondent does not admit, and retains the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Settlement Agreement, the validity of the findings of fact, conclusions of law, and determinations in Sections IV and V of this Settlement Agreement. Respondent agrees to comply with and be bound by the terms of this Settlement Agreement and further agrees that it will not contest the basis or validity of this Settlement Agreement or its terms. Respondent agrees to undertake all actions required by this Settlement Agreement, including any

modifications thereto, and consents to and will not contest EPA's authority to issue or to enforce this Settlement Agreement. Except as expressly provided in this Settlement Agreement, the parties reserve all rights and defenses they may have.

II. PARTIES BOUND

5. This Settlement Agreement applies to and is binding upon EPA and upon Respondent and its successors and assigns. Any change in corporate or business organization status of Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter Respondent's responsibilities under this Settlement Agreement.

6. Respondent is liable for carrying out all activities required by this Settlement Agreement. Respondent shall ensure that its contractors, subcontractors, and representatives receive a copy of this Settlement Agreement within 14 days from the Effective Date or within 14 days of their contract to work on the project, and that they comply with this Settlement Agreement. Respondent shall be responsible for any noncompliance with this Settlement Agreement, except as set forth in Section XVIII (Stipulated Penalties).

III. DEFINITIONS

7. Unless otherwise expressly provided herein, terms used in this Settlement Agreement which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Settlement Agreement or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

a. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, *et seq*.

b. "Day" shall mean a calendar day. In computing any period of time under this Settlement Agreement, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

c. "Effective Date" shall be the effective date of this Settlement Agreement as provided in Section XXX.

d. "Engineering Evaluation/Cost Analysis" (EE/CA) shall have the definition and attributes described in the NCP, as may be modified by this Settlement Agreement.

e. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

f. "Ecology" or "State" shall mean the State of Washington Department of Ecology and any successor departments or agencies thereof.

g. "Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States has incurred in planning, developing and negotiating this Settlement Agreement, in reviewing or developing plans, reports and other items pursuant to this Settlement Agreement, verifying the Work, or otherwise implementing, overseeing, or enforcing this Settlement Agreement, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, costs incurred by EPA associated with EPA's preparation of any EPA decision documents (including any Action Memoranda), the costs incurred pursuant to Paragraph 23 (costs and attorneys fees and any monies paid to secure access, including the amount of just compensation), Paragraph 33 (emergency response), and Paragraph 59 (work takeover), as well as any other activities related to the Jorgensen Forge EAA undertaken by EPA and/or Ecology at Respondents' request.

h. "Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

i. "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

j. "Paragraph" shall mean a portion of this Settlement Agreement identified by an Arabic numeral.

k. "Parties" shall mean EPA and Respondent.

l. "RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, *et seq.* (also known as the Resource Conservation and Recovery Act).

m. "Section" shall mean a portion of this Settlement Agreement identified by a Roman numeral.

n. "Settlement Agreement" shall mean this Administrative Settlement Agreement and Order on Consent and all appendices attached hereto (listed in Section XXIX). In the event of conflict between this Settlement Agreement and any appendix, this Settlement Agreement shall control.

o. "Statement of Work" or "SOW" shall mean the statement of work for implementation of the removal action, as set forth in Appendix A to this Settlement Agreement, and any modifications made thereto in accordance with this Settlement Agreement.

p. "Waste Material" shall mean 1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); 2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); 3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); and 4) any "dangerous waste" under RCW 70.95E.010(1).

q. "Work" shall mean all activities Respondent is required to perform under this Settlement Agreement.

IV. FINDINGS OF FACT

8. EPA finds the following facts which Respondent neither admits nor denies:

a. The LDW Site consists of an approximately 5.5- mile engineered waterway, formerly the northern portion of the Duwamish River which flows into Seattle, Washington (see Figure 1), and sources thereto comprising the areal extent of contamination. EPA and the Washington State Department of Ecology (Ecology) jointly issued an Administrative Order on Consent pursuant to CERCLA and the state Model Toxics Control Act (MTCA) for a remedial investigation and feasibility study (RI/FS) for the LDW Site on December 21, 2000 to The Boeing Company (Boeing), City of Seattle, Port of Seattle and King County. A Record of Decision (ROD) selecting remedial action for the LDW Site is anticipated within the next few years. EPA and Ecology also agreed for their mutual convenience in a Memorandum of Understanding that EPA will generally be lead agency for in-water portions of the LDW Site and Ecology will generally be lead agency for upland source control, and that the Agencies may alter these lead-support roles at any time for any portions of the LDW Site.

b. The LDW has served as Seattle's major industrial corridor since it was created by the United States Army Corps of Engineers, completed in 1917. Industrial uses of and along the LDW have been extensive since its construction. The LDW is also habitat to numerous fish and other aquatic species, and is a migratory corridor for threatened and other anadromous fish species. Sources of releases to the LDW include but are not limited to, industrial releases, combined sewer overflows and urban run-off. The Muckleshoot Tribe has a treaty-granted fishery in the LDW that is currently limited to salmon which live most of their lives in the open ocean. The Suquamish Tribe's treaty-granted usual and accustomed fishing area is just north and west of the LDW and includes fish that use the LDW as part of their home range.

c. On September 13, 2001, the LDW Site was listed on the National Priorities List pursuant to Section 105 of CERCLA, 42 U.S.C. 9605, at 66 Fed. Reg. 47583.

d. The Boeing Plant 2-Jorgensen Forge EAA is of one of five EAAs selected during the RI by EPA and Ecology to address sediment hot spots within the LDW, based

primarily on concentrations of polychlorinated biphenyls (PCBs). For the purposes of this Settlement Agreement the term "Jorgensen Forge EAA" shall mean only the Jorgensen Forge portion of the "Boeing Plant 2-Jorgensen Forge EAA" selected during the RI. The Boeing Plant 2 portion will be addressed by Boeing as corrective action pursuant to RCRA. Appendix D to this Settlement Agreement depicts the Jorgensen Forge EAA. EPA is the lead agency for the Jorgensen Forge EAA with Ecology support. Ecology remains the lead agency for the upland portion of the Jorgensen Forge facility with EPA support. EPA is the lead agency for all corrective active action at or for the Boeing Plant 2 facility.

e. The Jorgensen Forge facility is located at 8531 E. Marginal Way S. in Tukwila, Washington (though it uses a Seattle mailing address) in an industrial area on the east bank of the LDW. It is adjacent to the Boeing Plant 2 facility to the north and to the Boeing Isaacson facility to the south. Major activities at the Jorgensen Forge facility have included metal forging, metal fabrication, metals reclamation and recycling. Respondent was the owner/operator of the facility from 1965 to 1992 during which time activities described in the preceding sentence were conducted. Jorgensen Forge Corporation, a Washington corporation primarily engaged at the facility in metal forging, fabrication, reclamation and recycling, succeeded Respondent as owner/operator of the facility and works cooperatively with Respondent pursuant to their contractual arrangements in addressing environmental issues at or for the facility.

f. On July 10, 2003, EPA issued an Administrative Order Consent for Sampling and Analysis at the Jorgensen Forge Property (2003 Order) to Respondent, which was formally amended on April 15, 2008 to require the completion of an Engineering Evaluation/Cost Analysis (EE/CA) for the Jorgensen Forge EAA by Respondent subject to EPA oversight. EPA concluded Respondent's work under the 2003 Order, as amended, consistent with the NCP and certified the successful completion of this work in a letter to Respondent dated February 1, 2012. The April 15, 2008 amendment to the 2003 Order also required the addition of the "Memorandum of Understanding:

Coordination at the Boeing and EMJ/Jorgensen Transition Zone Boundary Sediment Cleanup Areas; Lower Duwamish Waterway," executed by Respondent, Boeing and Jorgensen Forge Corporation in September 2007, as an enforceable part of the 2003 Order. This Memorandum was also simultaneously incorporated by formal Amendment into the outstanding RCRA Administrative Order on Consent, U.S. EPA Docket Number 1092-01-22-3008(h) (1994 Boeing Order), issued on January 18, 1994, to Boeing. Both the 2003 Order and 1994 Boeing Order Amendments contain the assurance that the Memorandum shall also be an incorporated attachment or appendix to all future Orders issued by EPA to Respondent and/or Jorgensen Forge Corporation and/or Boeing regarding the sediment cleanup that is the subject of the Memorandum. The Memorandum is so incorporated as Appendix B to this Settlement Agreement. Based in significant part on the EE/CA, EPA issued an Action Memorandum (Appendix C hereto) on September 30, 2011, selecting the NTCRA for the Jorgensen Forge EAA.

g. Respondent is a Delaware corporation doing business in the state of Washington.

h. Respondent and Jorgensen Forge Corporation have been cooperating in the performance of the necessary response actions to date at or for the Jorgensen Forge EAA.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

9. Based on the Findings of Fact set forth above EPA has determined that:

a. The Jorgensen Forge EAA is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

b. The contamination found at the Jorgensen Forge EAA, as identified in the Findings of Fact above, includes "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), and/or pollutants or contaminants which may present an imminent and substantial danger to the public health or welfare.

c. Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

d. Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is liable for performance of response action and for response costs incurred and to be incurred at the Jorgensen Forge EAA. Respondent is a past "owner" and/or "operator" of a portion of the facility at the time of a release(s), as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(1) of CERCLA, 42 U.S.C. § 9607(a)(1); and/or arranged for disposal or treatment, or arranged with a transporter for transport for disposal or treatment of hazardous substances at the facility, within the meaning of Section 107(a)(3) of CERCLA, 42 U.S.C. § 9607(a)(3).

e. The conditions described in the Findings of Fact above constitute an actual or threatened "release" of a hazardous substance from the facility as defined by Section 101(22) of CERCLA, 42 U.S.C.§ 9601(22).

f. The removal action required by this Settlement Agreement is necessary to protect the public health, welfare, or the environment and, if carried out in compliance with the terms of this Settlement Agreement, will be considered consistent with the NCP, as provided in Section 300.700(c)(3)(ii) of the NCP.

VI. SETTLEMENT AGREEMENT AND ORDER

Based upon the foregoing Findings of Fact, Conclusions of Law, Determinations, and the Administrative Record for the Site and the Jorgensen Forge EAA, it is hereby Ordered and Agreed that Respondent shall comply with all provisions of this Settlement Agreement, including, but not limited to, all appendices to this Settlement Agreement and all documents incorporated by reference into this Settlement Agreement.

VII. DESIGNATION OF CONTRACTOR, PROJECT COORDINATOR

10. Respondent shall retain one or more contractors to perform the Work and shall notify EPA of the name(s) and qualifications of such contractor(s) within 10 days of the

Effective Date. Respondent shall also notify EPA in writing of the name(s) and qualification(s) of any other contractor(s) or subcontractor(s) retained to perform the Work at least 7 days prior to commencement of such Work. EPA retains the right to disapprove of any or all of the contractors and/or subcontractors retained by Respondent. If EPA disapproves of a selected contractor in writing, Respondent shall retain a different contractor and shall notify EPA of that contractor's name and qualifications within 30 days of EPA's disapproval.

11. Respondent, with EPA's approval, has designated Amy Essig Desai, Senior Scientist at Farallon Consulting, L.L.C., 975 5th Avenue NW, Issaquah, WA 98027; Email: aedesai@farallonconsulting.com; Telephone: 425.295.0810, as its Project Coordinator. Respondent's Project Coordinator shall be responsible for administration of all actions by Respondent required by this Settlement Agreement. To the greatest extent possible, the Project Coordinator shall be present or readily available during field work. EPA retains the right to disapprove any successor Project Coordinator. If EPA disapproves of a designated Project Coordinator, Respondent shall retain a different Project Coordinator and shall notify EPA of that person's name, address, telephone number, and qualifications within 7 days following EPA's disapproval. Receipt by Respondent's Project Coordinator of any notice or communication from EPA relating to this Settlement Agreement shall constitute receipt by Respondent.

12. EPA has designated Aaron Lambert as its Project Coordinator. Except as otherwise provided in this Settlement Agreement, Respondent shall direct all submissions required by this Settlement Agreement to the EPA Project Coordinator at 1200 Sixth Avenue, Suite 900, M/S: ECL-111, Seattle, WA 98101.

13. EPA and Respondent shall have the right, subject to Paragraph 11, to change their respective designated Project Coordinator. Respondent shall notify EPA 7 days before any such change is made. The initial notification may be made orally, but shall be promptly followed by a written notice.

VIII. WORK TO BE PERFORMED

14. Respondent shall perform, at a minimum, all actions necessary to implement the Statement of Work (SOW), which is attached as Appendix A.

15. The actions to be implemented generally include, but are not limited to, the implementation of the Action Memorandum for the Jorgensen Forge EAA (Appendix C), as set forth in the SOW.

16. EPA removal action guidance, in addition to other guidance referenced in the SOW, and any additional relevant guidance, shall be consulted in implementing the SOW.

17. The primary objective of this removal action is to significantly reduce the potential risk to human health and the environment resulting from potential exposure to contaminants present at the Jorgensen Forge EAA.

18. For all Work, EPA may approve, disapprove, require revisions to, or modify a deliverable in whole or in part. If EPA requires revisions, Respondents shall submit a revised deliverable within 30 days, or the duration identified in the Schedule of Deliverables in the attached Statement of Work, following receipt of EPA's notification of the required revisions, unless otherwise noted in the SOW. Respondents shall implement the Work as approved in writing by EPA in accordance with the schedule approved by EPA. Once approved, or approved with modifications, the Work and the schedule, and any subsequent modifications, shall be incorporated into and become fully enforceable under this Settlement Agreement.

19. Respondent shall not commence any Work except in conformance with the terms of this Settlement Agreement. Respondent shall not commence implementation of the Work developed hereunder until after receiving written EPA approval pursuant to this Section.

20. Reporting.

a. Respondent shall each submit a written progress report to EPA concerning its actions undertaken pursuant to this Settlement Agreement by the fifteenth (15) calendar day of each month after the Effective Date until termination of this Settlement Agreement, unless

otherwise directed in writing by the EPA Project Coordinator. These reports shall describe all significant developments during the preceding period, including the actions performed and any problems encountered, a statement of the percent of the project completed to date, analytical data received during the reporting period, and the developments anticipated during the next reporting period, including a schedule of actions to be performed, anticipated problems, and planned resolutions of past or anticipated problems.

b. At least 30 days prior to the conveyance of any interest in real property at the Jorgensen Forge EAA owned or controlled by Respondent or by Jorgensen Forge Corporation, Respondent or the Jorgensen Forge Corporation shall give written notice to the transferee that the property is subject to this Settlement Agreement and written notice to EPA and Ecology of the proposed conveyance, including the name and address of the transferee. Respondent also agrees to obtain an enforceable agreement in writing from the Jorgensen Forge Corporation that their successor(s), if any, comply with the immediately preceding sentence and Sections IX (Site Access) and X (Access to Information).

21. Off-Site Shipments.

a. Respondent shall, prior to any off-site shipment of Waste Material from the Jorgensen Forge EAA to an out-of-state waste management facility, provide written notification of such shipment of Waste Material to the appropriate state environmental official in the receiving facility's state and to the EPA Project Coordinator. However, this notification requirement shall not apply to any off-site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

i. Respondent shall include in the written notification the following information: 1) the name and location of the facility to which the Waste Material is to be shipped; 2) the type and quantity of the Waste Material to be shipped; 3) the expected schedule for the shipment of the Waste Material; and 4) the method of transportation. Respondent shall notify the state in which the planned receiving facility is located of major changes in the

shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

ii. The identity of the receiving facility and state will be determined by Respondent following the award of the contract for the removal action. Respondent shall provide the information required by Paragraph 21(a) and 21(b) as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

b. Before shipping any hazardous substances, pollutants, or contaminants from the Jorgensen Forge EAA to an off-site location, Respondent shall obtain EPA's certification that the proposed receiving facility is operating in compliance with the requirements of CERCLA Section 121(d)(3), 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Respondent shall only send hazardous substances, pollutants, or contaminants from the Jorgensen Forge EAA to an off-site facility that EPA has certified as in compliance with the requirements of the statutory provision and regulation cited in the preceding sentence.

IX. ACCESS

22. If any portion of the Jorgensen Forge EAA, or any other property where access is needed to implement this Settlement Agreement, is owned or controlled by Respondent or by Jorgensen Forge Corporation, Respondent shall, commencing on the Effective Date, provide EPA and its representatives, including contractors, with access at all reasonable times to such property for the purpose of conducting any activity related to this Settlement Agreement. EPA shall provide reasonable notice under the circumstances to Respondent and to Jorgensen Forge Corporation concerning any EPA activities under this Settlement Agreement for which access to such property will be necessary, and absent emergency circumstances, shall attempt to coordinate with Respondent and/or Jorgensen Forge Corporation to minimize disruption to use of the property. In all cases, and notwithstanding any other provision of this Paragraph 22, EPA and Respondent shall comply with Jorgensen Forge Corporation security and access rules

established in conjunction with its contracts with the U.S. Navy, U.S. Navy suppliers, and other defense-related firms, which rules are summarized in Appendix E to this Settlement Agreement.

23. Where any action under this Settlement Agreement is to be performed in areas owned by or in possession of someone other than Respondent or Jorgensen Forge Corporation, Respondent shall use its best efforts to obtain all necessary access agreements within 30 days after the Effective Date, or as otherwise specified in writing by the EPA Project Coordinator. Respondent shall immediately notify EPA if after using its best efforts it is unable to obtain such agreements. For purposes of this Paragraph, "best efforts" includes the payment of reasonable sums of money in consideration of access. Respondent shall describe in writing its efforts to obtain access. EPA may then assist Respondent in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as EPA deems appropriate. Respondent shall reimburse EPA for all costs and attorney's fees incurred by the United States in obtaining such access, in accordance with the procedures in Section XV (Payment of Response Costs).

24. Notwithstanding any provision of this Settlement Agreement, EPA retains all of its access authorities and rights, as well as all of its rights to require land/water use restrictions, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

X. ACCESS TO INFORMATION

25. Respondent shall provide copies to EPA, upon request, of all documents and information within its possession or control or that of its contractors or agents relating to activities at the Jorgensen Forge EAA or to the implementation of this Settlement Agreement, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Respondent shall also make available to EPA, for purposes of investigation,

information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

26. Respondent may assert business confidentiality claims covering part or all of the documents or information submitted to EPA under this Settlement Agreement, specifically including contractor costs and documentation thereof, but specifically excluding deliverables required by the attached SOW on which EPA may rely in addressing the Jorgensen Forge EAA or the LDW Site, to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to EPA, or if EPA has notified Respondent that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such documents or information without further notice to Respondent.

27. Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondent asserts such a privilege in lieu of providing documents, it shall provide EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by Respondent. However, no deliverable or formal correspondence with EPA created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

28. No claim of confidentiality shall be made with respect to any data submitted or to be considered by EPA with respect to the Jorgensen Forge EAA or the LDW Site, including, but

not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Jorgensen Forge EAA.

XI. RECORD RETENTION

29. Until 10 years after Respondent's receipt of EPA's notification pursuant to Section XXVIII (Notice of Completion of Work), Respondent shall preserve and retain all non-identical copies of records and documents (including records or documents in electronic form) now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Jorgensen Forge EAA, regardless of any corporate retention policy to the contrary. Until 10 years after Respondent's receipt of EPA's notification pursuant to Section XXVIII (Notice of Completion of Work), Respondent shall also instruct its contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to performance of the Work.

30. At the conclusion of this document retention period, Respondent shall notify EPA and Ecology at least 90 days prior to the destruction of any such records or documents, and, upon request by EPA or Ecology, Respondent shall deliver any such records or documents to EPA or Ecology. Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondent asserts such a privilege, it shall provide EPA or Ecology with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the subject of the document, record, or information; and 6) the privilege asserted by Respondent. However, no deliverable or formal correspondence with EPA created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

31. Respondent hereby certifies that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information (other than identical copies) relating to its potential liability regarding the Jorgensen Forge EAA since notification of potential liability by EPA or Ecology or the filing of suit against it regarding the Jorgensen Forge EAA and that it has fully complied with any and all EPA requests for information pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927.

XII. COMPLIANCE WITH OTHER LAWS

32. Respondent shall perform all actions required pursuant to this Settlement Agreement in accordance with all applicable local, state, and federal laws and regulations except as provided in Section 121(e) of CERCLA, 42 U.S.C. § 6921(e), and 40 C.F.R. §§ 300.400(e) and 300.415(j). In accordance with 40 C.F.R. § 300.415(j), all actions required pursuant to this Settlement Agreement shall, to the extent practicable, as determined by EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements under federal environmental or state environmental or facility siting laws.

XIII. EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES

33. In the event of any action or occurrence during performance of the Work which causes or threatens to cause a release of Waste Material from the Jorgensen Forge EAA that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondent shall immediately take all appropriate action. Respondent shall take these actions in accordance with all applicable provisions of this Settlement Agreement, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondent shall also immediately notify the EPA Project Coordinator or, in the event of his/her unavailability, the Regional Duty Officer, Environmental Cleanup Office, Emergency Response Unit, EPA Region X, 206-553-1263, of the incident or conditions. In the event that Respondent fail to take appropriate response action as required by this Paragraph, and EPA takes

such action instead, Respondent shall reimburse EPA all costs of the response action not inconsistent with the NCP pursuant to Section XV (Payment of Response Costs).

34. In addition, in the event of any release of a hazardous substance from the Jorgensen Forge EAA, Respondent shall immediately notify the EPA Project Coordinator and the National Response Center at (800) 424-8802. Respondent shall submit a written report to EPA within 7 days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. §§ 11001, *et seq.*

XIV. AUTHORITY OF EPA PROJECT COORDINATOR

35. The EPA Project Coordinator shall be responsible for overseeing Respondent's implementation of this Settlement Agreement. The Project Coordinator shall have the authority vested in an On-Scene Coordinator (OSC) by the NCP, including the authority to halt, conduct, or direct any Work required by this Settlement Agreement, or to direct any other removal action undertaken at the Jorgensen Forge EAA, as well as the authority of a Remedial Project Manager (RPM) as set forth in the NCP. Absence of the EPA Project Coordinator from the Jorgensen Forge EAA shall not be cause for stoppage of work unless specifically directed by the EPA Project Coordinator.

XV. PAYMENT OF RESPONSE COSTS

36. Payments for Future Response Costs.

a. Respondent shall pay EPA all Future Response Costs not inconsistent with the NCP. On a periodic basis, EPA will send Respondent bills requiring payment that include a SCORPIOS or other regionally prepared cost summary, which includes direct and indirect costs incurred by EPA and its contractors. Respondent shall make all payments within 30 days of

receipt of each bill requiring payment, as specified herein or as otherwise provided in Paragraph 39 of this Settlement Agreement.

b. Respondent payments greater than $10,000 shall be made to EPA by Electronic Funds Transfer directed to the Federal Reserve Bank of New York as follows:

Federal Reserve Bank of New York
(b) (6)
33 Liberty Street
New York, NY 10045
Field Tag 4200 of the Fedwire message should read "D68010727 Environmental Protection Agency (10KX).

Respondent shall make all payments of $10,000 or less as required by this Paragraph by a certified or cashier's check or checks made payable to "EPA Hazardous Substance Superfund," referencing Respondent's name and address, the Docket Number of this Settlement Agreement, and appropriate EPA Site/Spill ID number 10XK, and shall be clearly designated as Response Costs: LDW Jorgensen Forge EAA. Respondent shall send the check(s) to:

US Environmental Protection Agency
Superfund Payments
Cincinnati Finance Center
PO Box 979076
St. Louis, MO 63197-9000.

c. At the time of payment, Respondent shall send notice that payment has been made, as indicated in Paragraph 12 above, to the U.S. Environmental Protection Agency, Finance Center MS-NWD, Cincinnati, OH 45268 or acctsreceivable.cinwd@epa.gov, and to the EPA Project Manager.

37. The total amount to be paid by Respondent pursuant to this Section shall be deposited in the Lower Duwamish Waterway Superfund Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at

or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

38. If payments for Future Response Costs are not made within 30 days of Respondent's receipt of a bill, Respondent shall pay Interest on the unpaid balance. The Interest on Future Response Costs shall begin to accrue on the date of Respondent's receipt of the bill and shall continue to accrue until the date of payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondent's failure to make timely payments under this Section, including but not limited to, payment of stipulated penalties pursuant to Section XVIII.

39. Respondent may dispute all or part of its bills for Future Response Costs submitted under this Settlement Agreement, if Respondent alleges that EPA has made an accounting error, or that a cost item is inconsistent with the NCP. If any dispute over costs is resolved before payment is due, the amount due will be adjusted accordingly. If the dispute is not resolved before payment is due, Respondent shall pay the full amount of the uncontested costs to EPA as specified in this Section on or before the due date. Within the same time period, Respondent shall pay the full amount of the contested costs into an interest-bearing escrow account. Respondent shall simultaneously transmit a copy of both checks to the persons listed in this Section above, together with a copy of the correspondence that established and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Respondent shall ensure that the prevailing party in the dispute shall receive the amount upon which they prevailed from the escrow funds plus interest within 10 days after the dispute is resolved.

XVI. DISPUTE RESOLUTION

40. Unless otherwise expressly provided for in this Settlement Agreement, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes

arising under this Settlement Agreement. The Parties shall attempt to resolve any disagreements concerning this Settlement Agreement expeditiously and informally.

41. If Respondent objects to any EPA action taken pursuant to this Settlement Agreement, including billings for Future Response Costs, Respondent shall notify EPA in writing of its objection(s) within 14 days of such action, unless the objection(s) has/have been resolved informally. EPA and Respondent shall have 14 days from EPA's receipt of Respondent's written objection(s) to resolve the dispute through formal negotiations (the Negotiation Period). The Negotiation Period may be extended at the sole discretion of EPA.

42. Any agreement reached by the Parties pursuant to this Section shall be in writing and shall, upon signature by both Parties, be incorporated into and become an enforceable part of this Settlement Agreement. If the Parties are unable to reach an agreement within the Negotiation Period, the Director of the EPA Region X Environmental Cleanup Office or his/her Associate Director (ECL Director) will issue a written decision on the dispute to Respondent. EPA's decision shall be incorporated into and become an enforceable part of this Settlement Agreement. Respondent's obligations under this Settlement Agreement shall not be tolled by submission of any objection for dispute resolution under this Section. Following resolution of the dispute, as provided by this Section, Respondent shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with EPA's decision, whichever occurs. Any written statement of objections submitted by Respondent and any accompanying documentation shall be retained by EPA in an Administrative Record at the written request of Respondent or at EPA's discretion if there is no written retention request by Respondent.

XVII. FORCE MAJEURE

43. Respondent agrees to perform all requirements of this Settlement Agreement within the time limits established under this Settlement Agreement, unless the performance is delayed by a *force majeure*. For purposes of this Settlement Agreement, a *force majeure* is

defined as any event arising from causes beyond the control of Respondent or the Jorgensen Forge Corporation, or of any entity controlled by Respondent or the Jorgensen Forge Corporation, including but not limited to their contractors and subcontractors, which delays or prevents performance of any obligation under this Settlement Agreement despite Respondent's best efforts to fulfill the obligation. *Force majeure* does not include financial inability to complete the Work, increased cost of performance, or a failure to attain performance standards/action levels selected by EPA.

44. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement Agreement, whether or not caused by a *force majeure* event, Respondent shall notify EPA orally within 24 hours of when Respondent first knew that the event might cause a delay. Within 10 days thereafter, Respondent shall provide to EPA in writing an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondent's rationale for attributing such delay to a *force majeure* event if it intends to assert such a claim, including supporting documentation for such a claim; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of *force majeure* for that event for the period of time of such failure to comply and for any additional delay caused by such failure.

45. If EPA agrees that the delay or anticipated delay is attributable to a *force majeure* event, the time for performance of the obligations under this Settlement Agreement that are affected by the *force majeure* event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused

by a *force majeure* event, EPA will notify Respondent in writing of its decision. If EPA agrees that the delay is attributable to a *force majeure* event, EPA will notify Respondent in writing of the length of the extension for performance of the obligations affected by the *force majeure* event.

XVIII. STIPULATED PENALTIES

46. Respondent shall be liable to EPA for stipulated penalties in the amounts set forth in this Section for its failure to comply with the requirements of this Settlement Agreement specified below, unless excused under Section XVII (*Force Majeure*). "Compliance" by Respondent shall include completion of the activities under this Settlement Agreement or any work plan or other plan approved under this Settlement Agreement identified below in accordance with all applicable requirements of law, this Settlement Agreement, all Appendices, and any plans or other documents approved by EPA pursuant to this Settlement Agreement and within the specified time schedules established by and approved under this Settlement Agreement.

47. Stipulated Penalty Amounts - Work.

a. The following stipulated penalties shall accrue per violation per day for any noncompliance identified in Paragraph 47(b):

Penalty Per Violation Per Day	Period of Noncompliance
$ 1,000	1st through 7th day
$ 2,000	8th through 14th day
$ 3,500	15th through 30th day
$ 7,500	31st day through 90th day

b. The final and all submitted drafts of the following Compliance Milestones, including all component plans, as defined in the SOW:

1. Final Design (including the separately tasked Draft Final Design in the SOW)
2. Removal Action Work Plan
3. Removal Action Completion Report
4. Long-term Operations Monitoring & Maintenance Plan (Task 4 in the SOW)

48. Stipulated Penalty Amounts - Reports. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate final and all submitted draft reports or other written documents pursuant to this Settlement Agreement that are not listed in Paragraph 47(b), and any failure to timely and adequately complete any Work required by this Settlement Agreement or any approved plan or report:

Penalty Per Violation Per Day	Period of Noncompliance
$ 500	1st through 7th day
$ 1,000	8th day through 14th day
$ 2,500	15th through 30th day
$ 5,000	31st day through 90th day

49. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: 1) with respect to a deficient submission under Section VIII (Work to be Performed), during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Respondent of any deficiency; and 2) with respect to a decision by the ECL Director under Section XVI (Dispute Resolution), during the period, if any, beginning on the 21st day after the Negotiation Period begins until the date that the ECL Director issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Settlement Agreement.

50. Following EPA's determination that Respondent has failed to comply with a requirement of this Settlement Agreement, EPA may give Respondent written notification of the failure and describe the noncompliance. EPA may send Respondent a written demand for payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified Respondent of a violation.

51. All penalties accruing under this Section shall be due and payable to EPA within 30 days of Respondent's receipt from EPA of a demand for payment of the penalties, unless

Respondent invokes the dispute resolution procedures under Section XVI (Dispute Resolution). All payments to EPA under this Section shall be paid by certified or cashier's check(s) made payable to "EPA Hazardous Substances Superfund," shall be mailed to the Lockbox number and address set forth in Paragraph 36b, above, shall indicate that the payment is for stipulated penalties, and shall reference the EPA Region and the appropriate Site/Spill ID Number as set forth in Paragraph 36b, above, the EPA Docket Number of this Settlement Agreement, and the name and address of the parties making payment. Copies of check(s) paid pursuant to this Section, and any accompanying transmittal letter(s), shall be sent to EPA as provided in Paragraph 12, and to other receiving officials at EPA identified in Paragraph 36c, above.

52. The payment of penalties shall not alter in any way Respondent's obligation to complete performance of the Work required under this Settlement Agreement.

53. Penalties shall continue to accrue during any dispute resolution period, but need not be paid until 15 days after the dispute is resolved by agreement or by receipt of EPA's decision.

54. If Respondent fails to pay stipulated penalties when due, EPA may institute proceedings to collect the penalties, as well as Interest. Respondent shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 50.

55. Nothing in this Settlement Agreement shall be construed as prohibiting, altering, or in any way limiting the ability of EPA to seek any other remedies or sanctions available by virtue of Respondent's violation of this Settlement Agreement or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Sections 106(b) and 122(l) of CERCLA, 42 U.S.C. §§ 9606(b) and 9622(l), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Provided, however, that EPA shall not seek civil penalties pursuant to Section 106(b) or 122(l) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided

herein, except in the case of a willful violation of this Settlement Agreement or in the event that EPA assumes performance of a portion or all of the Work pursuant to Section XX, Paragraph 59. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Settlement Agreement.

XIX. COVENANT NOT TO SUE BY EPA

56. In consideration of the actions that will be performed and the payments that will be made by Respondent under the terms of this Settlement Agreement, and except as otherwise specifically provided in this Settlement Agreement, EPA covenants not to sue or to take administrative action against Respondent pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for the Work and for Future Response Costs. This covenant not to sue shall take effect upon the Effective Date and is conditioned upon the complete and satisfactory performance by Respondent of all obligations under this Settlement Agreement, including, but not limited to, payment of Future Response Costs pursuant to Section XV. This covenant not to sue extends only to Respondent and does not extend to any other person.

XX. RESERVATIONS OF RIGHTS

57. Except as specifically provided in this Settlement Agreement, nothing herein shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Settlement Agreement, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondent in the future to perform additional activities pursuant to CERCLA or any other applicable law. Respondent reserves all rights and defenses it may have to such actions.

58. The covenant not to sue set forth in Section XIX above does not pertain to any matters other than those expressly identified therein. EPA reserves, and this Settlement Agreement is without prejudice to, all rights against Respondent with respect to all other matters, including, but not limited to:

a. claims based on a failure by Respondent to meet a requirement of this Settlement Agreement;

b. liability for costs not included within the definition of Future Response Costs;

c. liability for performance of response action other than the Work;

d. criminal liability;

e. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

f. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Jorgensen Forge EAA; and

g. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Jorgensen Forge EAA.

59. Work Takeover. In the event EPA determines that Respondent has ceased implementation of any portion of the Work, is seriously or repeatedly deficient or late in its performance of the Work, or is implementing the Work in a manner which may cause an endangerment to human health or the environment, EPA may assume the performance of all or any portion of the Work as EPA determines necessary. Respondent may invoke the procedures set forth in Section XVI (Dispute Resolution) to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. Costs incurred by the United States in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that Respondent shall pay pursuant to Section XV (Payment of Response Costs). Notwithstanding any other

provision of this Settlement Agreement, EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

XXI. COVENANT NOT TO SUE BY RESPONDENT

60. Respondent covenants not to sue and agrees not to assert any claims or causes of action against EPA, or its contractors or employees, with respect to the Work, Future Response Costs, or this Settlement Agreement, including, but not limited to:

a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

b. any claim arising out of response actions at or in connection with the Jorgensen Forge EAA, including any claim under the United States Constitution, the Washington State Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law; or

c. any claim pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the Jorgensen Forge EAA. The covenants not to sue in this Section shall not apply in the event the United States brings a cause of action or issues an order pursuant to the reservations set forth in Paragraphs 58 (b), (c), and (e) - (g), but only to the extent that Respondent's claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

61. Nothing in this Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

XXII. OTHER CLAIMS

62. By issuance of this Settlement Agreement, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of

Respondent. The United States or EPA shall not be deemed a party to any contract entered into by Respondent or its directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Settlement Agreement.

63. Except as expressly provided in Section XIX (Covenant Not to Sue by EPA), nothing in this Settlement Agreement constitutes a satisfaction of or release from any claim or cause of action against Respondent or any person not a party to this Settlement Agreement, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

64. No action or decision by EPA pursuant to this Settlement Agreement shall give rise to any right to judicial review, except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXIII. CONTRIBUTION

65. The Parties agree that:

a. This Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(2) of CERCLA, 42 U.S.C. § 9613(f)(2), and that Respondent is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), for "matters addressed" in this Settlement Agreement. The "matters addressed" in this Settlement Agreement are the Work and Future Response Costs.

b. This Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B), pursuant to which Respondent has, as of the Effective Date, resolved its liability to the United States for the Work and Future Response Costs.

c. Nothing in this Settlement Agreement precludes the United States or Respondent from asserting any claims, causes of action, or demands for indemnification,

contribution, or cost recovery against any persons not parties to this Settlement Agreement. Nothing herein diminishes the right of the United States, pursuant to Sections 113(f)(2) and (3) of CERCLA, 42 U.S.C. § 9613(f)(2)-(3), to pursue any such persons to obtain additional response costs or response action and to enter into settlements that give rise to contribution protection pursuant to Section 113(f)(2).

66. Respondent agrees that with respect to any suit or claim for contribution brought by it for matters related to this Settlement Agreement, it will notify EPA in writing no later than 60 days prior to the initiation of such suit or claim. Respondent further agrees that with respect to any suit or claim for contribution brought against it for matters related to this Settlement Agreement, it will notify EPA in writing within 10 days of service of the complaint on it. In addition, Respondent shall notify EPA within 10 days of service or receipt of any Motion for Summary Judgment and within 10 days of receipt of any order from a court setting a case for trial.

67. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive relief, recovery of response costs, or other appropriate relief relating to the Jorgensen Forge EAA or this Settlement Agreement, Respondent shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding should have been addressed in this Settlement Agreement; provided, however, that nothing in this Paragraph affects the enforceability of the covenants not to sue set forth in this Settlement Agreement.

XXIV. INDEMNIFICATION

68. Respondent shall indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, or

subcontractors, in carrying out actions pursuant to this Settlement Agreement. In addition, Respondent agrees to pay the United States all costs incurred by the United States, including but not limited to attorneys fees and other expenses of litigation and settlement, arising from or on account of claims made against the United States based on negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Settlement Agreement. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondent in carrying out activities pursuant to this Settlement Agreement. Neither Respondent nor any such contractor shall be considered an agent of the United States.

69. The United States shall give Respondent notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Respondent prior to settling such claim.

70. Respondent waives all claims against EPA for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Jorgensen Forge EAA, including, but not limited to, claims on account of construction delays. In addition, Respondent shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Jorgensen Forge EAA, including, but not limited to, claims on account of construction delays.

XXV. INSURANCE

71. At least 7 days prior to commencing any field Work under this Settlement Agreement, Respondent shall secure, and shall maintain for the duration of this Settlement Agreement, comprehensive general liability insurance and automobile insurance with limits of 5

million dollars, combined single limit. Within the same time period, Respondent shall provide EPA with certificates of such insurance and a copy of each insurance policy. In addition, for the duration of the Settlement Agreement, Respondent shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondent in furtherance of this Settlement Agreement. If Respondent demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then Respondent need provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor.

XXVI. FINANCIAL ASSURANCE

72. Within 30 days of the Effective Date and on the anniversary of the Effective Date every year thereafter until Notice of Completion of Work in accordance with Section XXVIII below is received from EPA, Respondent shall establish and maintain financial security in the amount of $7.09 million to assure the Work and any other obligations required under this Settlement Agreement in one or more of the following forms:

a. A surety bond guaranteeing performance of the Work;

b. One or more irrevocable letters of credit equaling the total estimated cost of the Work;

c. A trust fund;

d. A guarantee to perform the Work by one or more parent corporations or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with Respondent; or

e. A demonstration that Respondent satisfies the requirements of 40 C.F.R. Part 264.143(f).

73. If Respondent seeks to demonstrate the ability to complete the Work through a guarantee by a third party pursuant to Paragraph 72(d) of this Section, Respondent shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f). If Respondent seek to demonstrate its ability to complete the Work by means of the financial test or the corporate guarantee pursuant to Paragraph 72(d) or (e) of this Section, it shall resubmit sworn statements conveying the information required by 40 C.F.R. 264.143(f) annually, on the anniversary of the Effective Date. In the event that EPA determines at any time that the financial assurances provided pursuant to this Section are inadequate, Respondent shall, within 30 days of receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 72 of this Section. Respondent's inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Settlement Agreement.

74. If, after the Effective Date, Respondent can show that the estimated cost to complete the remaining Work has diminished below $7.09 million, Respondent may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Respondent shall submit a proposal for such reduction to EPA, in accordance with the requirements of this Section, and may reduce the amount of the security upon approval by EPA. In the event of a dispute, Respondent may reduce the amount of the security in accordance with the written decision resolving the dispute.

75. Respondent may change the form of financial assurance provided under this Section at any time, upon notice to and approval by EPA, provided that the new form of assurance meets the requirements of this Section. In the event of a dispute, Respondent may change the form of the financial assurance only in accordance with the written decision resolving the dispute.

XXVII. MODIFICATIONS

76. The EPA Project Coordinator may make modifications to any plan or schedule in writing or by oral direction. Any oral modification will be memorialized in writing by EPA promptly, but shall have as its effective date the date of the EPA Project Coordinator's oral direction. Any other requirements of this Settlement Agreement may be modified in writing by mutual agreement of the Parties.

77. If Respondents seek permission to deviate from any approved work plan or schedule or Statement of Work, Respondent's Project Coordinator shall submit a written request to EPA for approval outlining the proposed modification and its basis. Respondent may not proceed with the requested deviation until receiving oral or written approval from the EPA Project Coordinator pursuant to Paragraph 76.

78. No informal advice, guidance, suggestion, or comment by the EPA Project Coordinator or other EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondent shall relieve Respondent of its obligation to obtain any formal approval required by this Settlement Agreement, or to comply with all requirements of this Settlement Agreement, unless it is formally modified.

XXVIII. NOTICE OF COMPLETION OF WORK

79. When EPA determines, after EPA's review of the Final Removal Action Completion Report, that all Work has been fully performed in accordance with this Settlement Agreement, with the exception of any continuing obligations required by this Settlement Agreement, including post-removal controls and monitoring, if any, payment of Future Response Costs, or record retention, EPA will provide written notice to Respondent. If EPA determines that any such Work has not been completed in accordance with this Settlement Agreement, EPA will notify Respondent, provide a list of the deficiencies, and require that Respondent correct such deficiencies. Respondent shall implement the modified and approved Work Plan and shall submit a modified Final Removal Action Completion Report in accordance with the EPA notice.

Failure by Respondent to implement the approved modified Work Plan shall be a violation of this Settlement Agreement.

XXIX. SEVERABILITY/INTEGRATION/APPENDICES

80. If a court issues an order that invalidates any provision of this Settlement Agreement or finds that Respondent has sufficient cause not to comply with one or more provisions of this Settlement Agreement, Respondent shall remain bound to comply with all provisions of this Settlement Agreement not invalidated or determined to be subject to a sufficient cause defense by the court's order.

81. This Settlement Agreement and its appendices constitute the final, complete and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Settlement Agreement. The Parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than those expressly contained in this Settlement Agreement. The following appendices are attached to and incorporated into this Settlement Agreement:

a. Appendix A: Statement of Work.

b. Appendix B: Memorandum of Understanding: Coordination at the Boeing and EMJ/Jorgensen Transition Zone Boundary Sediment Cleanup Areas; Lower Duwamish Waterway.

c. Appendix C: Action Memorandum for the Jorgensen Forge EAA.

d. Appendix D: Depiction of Jorgensen Forge EAA.

e. Appendix E: Access to Jorgensen Forge Company Propoerty.

XXX. EFFECTIVE DATE

82. This Settlement Agreement shall be effective on the day it is issued by EPA. The undersigned representative of Respondent certifies that s/he is fully authorized to enter into the terms and conditions of this Settlement Agreement and to bind Respondent to this document.

XXXI. NOTICES AND SUBMISSIONS

83. Documents including work plans, reports, approvals, disapprovals, and other correspondence which must be submitted under this Settlement Agreement, shall be sent to the individuals at the addresses specified below, unless those individuals give written notice of a change to the other parties. All notices and submissions shall be considered effective one business day after receipt by Respondent's Project Coordinator, unless otherwise provided. Upon request by EPA, Respondent shall submit such documents in electronic form.

a. Two (2) copies of documents submitted to EPA shall be forwarded to:

Aaron Lambert
U.S. Environmental Protection Agency
1200 Sixth Avenue, ECL-111, Suite 900
Seattle, Washington 98101

b. One (1) copy of documents submitted to EPA shall be forwarded to:

Maureen Sanchez
Washington Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, Washington 98504

It is so ORDERED and AGREED.

By: Cami Grandinetti Date: 11/5/12
Cami Grandinetti
Remedial Program Manager
Environmental Cleanup Office
U.S. EPA, Region X

For Respondent Earle M. Jorgensen Company:

By: _____ Date_____

E. Gilbert Leon Jr., VP, CFO

Appendix A

STATEMENT OF WORK

Jorgensen Forge Early Action Area Non-Time Critical Removal Action

This Statement of Work (SOW) is Appendix A to the Administrative Settlement Agreement and Order on Consent For Non-Time Critical Removal Action (NTCRA) Implementation (Settlement Agreement), for the Jorgensen Forge Early Action Area (EAA) (Figure 1), U.S. Environmental Protection Agency (EPA) Docket No. CERCLA- 10-2013-0032 located within the Lower Duwamish Waterway Superfund Site (LDW Site). It sets forth an outline of the requirements which shall be completed for the Removal Design/Removal Action (RvD/RvA) of the NTCRA selected in the Action Memorandum issued on July 29, 2011. The RvD is generally those activities to be undertaken to develop the final plans and specifications, general provisions, and requirements necessary to implement the NTCRA in the RvA phase. The RvA is generally the implementation phase of the NTCRA, including necessary operation and maintenance, performance monitoring, and requirements. The RvA will be detailed during RvD phase.

General Requirements:

Respondent shall conduct the RvD/RvA in accordance with this Settlement Agreement, including all appendices, in a manner consistent to the extent practicable with EPA policy and guidance for conducting Remedial Design/Remedial Action.

I. PERFORMANCE STANDARDS

Respondent shall perform the Work as set forth in the deliverables approved by EPA, including the Operations Monitoring and Maintenance Plan (OMMP) which establishes long-term monitoring requirements and potential future additional response actions; to ensure that performance standards are achieved for the removal action area. The RvA is the area encompassed within the EPA-approved Removal Action Boundary (RAB) and will be subject to ten years of long-term monitoring of contaminants of concern (COCs), under this Settlement Agreement, and as set forth in the Action Memorandum, to document changes in surface sediment COC concentrations over time following completion of the Work. Respondent will only be responsible under this Settlement Agreement for recontamination attributable to the Jorgensen Forge facility. EPA does not anticipate that subsurface sediments beneath the Jorgensen Forge EAA backfill will need to be removed or that the Jorgensen Forge EAA backfill will be considered a cap in the future.

II. WORK TO BE PERFORMED BY RESPONDENT

II.1 Supporting Plans

The following are the primary project planning and supporting tasks.

II.2 Removal Design/Removal Action

i. Task 1 – Removal Design
ii. Task 2 – Removal Action Work Plan
iii. Task 3 – Removal Action Construction Implementation and Reporting
iv. Task 4 – Community Involvement Support
v. Task 5 – Institutional Controls

All documents, including work plans, reports, and memoranda required under this Settlement Agreement are subject to EPA review and approval as set forth in Paragraph 18 of the Settlement Agreement. All revised deliverables shall include a transmittal that states that the revision responds to each comment and identifies how the comment was addressed in the revision. All progress reports will be used by EPA for informational purposes only and will not be formally approved.

II.2.1 Task 1 - Removal Design

II.2.1.1 Draft Final Design

The Draft Final Design submittal shall include or discuss, at a minimum, the following:

i. Results of any additional field sampling (completed following submittal of the Final Engineering Evaluation/Cost Analysis (EE/CA) with EPA approval) will be included in a Basis of Design (BOD) Report.

   Construction documents including Drawings and Specifications shall provide sufficient detail to allow Respondent to take construction bids for the NTCRA.

ii. Description/outline of proposed performance standard verification methods for Removal Action construction, including compliance with ARARs that will be addressed in the Construction Quality Assurance Plan (CQAP) and OMMP, and identification of the conclusion of the CQAP activities and beginning of OMMP activities.

iii. The design deliverables shall include the following:

Sampling and Analysis Plan (SAP), comprised of a Field Sampling Plan (FSP) and project-specific Quality Assurance Project Plan (QAPP) for sample analysis and data handling for any samples collected during construction of the NTCRA and monitoring as part of the OMMP. The SAP shall be based upon the Settlement Agreement, SOW, and EPA guidance. As appropriate, the SAP will ensure that sample collection and analytical activities are conducted in accordance with the Puget Sound Estuary Program protocols.

The FSP will define in detail the sampling and data-gathering methods that will be used during completion of the NTCRA. It will include sampling objectives, a detailed description of sampling activities, sample locations, sample analysis, sampling equipment and procedures, sampling schedule, station positioning, and sample handling (e.g., sample containers and labels, sample preservation).

The QAPP will describe the quality assurance and quality control (QA/QC) protocols necessary to achieve required data quality objectives. The QAPP will be prepared in accordance with "EPA Requirements for Quality Assurance Project Plans (QA/R-5)" (EPA/240/B-01/003, March 2001) and "Guidance on Quality Assurance Project Plans (QA/G-5)" (EPA/240/R-02/009, December 2002). The QAPP will address sampling procedures, sample custody, analytical procedures, and data reduction, validation, reporting, and personnel qualifications.

The laboratory performing the work must have and follow an approved Quality Assurance (QA) program, which complies with "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01-002, March 2001) or equivalent documentation as determined by EPA. If a laboratory not in the EPA Contract Laboratory Program (CLP) is selected, the QAPP shall be consistent with the requirements of the CLP for laboratories proposed outside the CLP. Respondents will provide assurances that EPA has access to laboratory personnel, equipment and records for sample collection, transportation, and analysis.

All sampling and analyses performed pursuant to this Settlement Agreement shall conform to EPA direction, approval, and guidance regarding sampling, QA/QC, data validation, and chain-of-custody procedures. Respondents shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with the relevant EPA guidance. Upon request by EPA, Respondents shall have such a laboratory analyze samples submitted by EPA for QA monitoring.

activities. The final proposed Project Schedule submitted as part of the Final Design shall include specific dates for major milestones and completion of the Work. The General Contractor will develop a construction schedule, which may vary slightly from the Project Schedule but will achieve the major milestones and completion of the Work within the allowed in-water construction window.

- **Cost Estimate:** An updated cost estimate will be developed for the RvA. It will specify direct capital costs, indirect costs and operation, maintenance, and monitoring costs for full accomplishment of the NTCRA. The updated costs will reflect the detail associated with other design deliverables so that it is consistent with those deliverables.

II.2.1.2 Final Design

Respondent shall submit the Final Design, if necessary or required by EPA, which shall fully address all comments made on the Draft Final Design deliverables and shall include reproducible drawings and specifications suitable for bid advertisement. At a minimum, Respondent shall submit a letter responding to all comments received on the Draft Final Design submittal and how these comments were or were not incorporated into the Final Design submittal.

II.2.2 Task 2 – Removal Action Work Plan

Following EPA approval of the Final Design and subsequent bid and selection of the General Contractor for completion of the Work, the Respondent shall submit a Removal Action Work Plan (RAWP) that includes a detailed description of the RvD/RvA and construction activities, including how those construction activities are to be implemented by Respondent and coordinated with EPA (e.g., site-monitoring, anticipated General Contractor material staging and handling procedures), the Boeing Plant 2 RCRA sediment corrective action, Terminal 117 NTCRA, and any other cleanup projects slated for this portion of the LDW, as well as tribal treaty-protected fishing rights and other LDW activities. When describing implementation of the NTCRA, Respondent shall identify discrete elements for purposes of monitoring construction activities as they occur. The following shall be considered examples of discrete elements of the NTCRA: dredging, transportation and disposal, slope excavation, and bank backfill placement. The RAWP shall include a project schedule for each major activity and submission of deliverables generated during the NTCRA.

The RAWP shall include:

i. The schedule for completion of the NTCRA;
ii. Method for selection of the General Contractor;

- Pending design, personnel or schedule changes requiring EPA review and approval; and,
- Results of any NTCRA Performance Standard evaluations and associated decisions and action items.

iii. Pre-final Certification Inspection. Within ninety (90) days after Respondent concludes that the Work has been fully performed and the performance standards have been achieved, Respondent shall notify EPA for the purposes of conducting a pre-certification inspection. Respondent will provide EPA with results of performance standards evaluations at least seven (7) days prior to the pre-certification inspection. The pre-certification inspection shall consist of a walk-about and/or boat tour inspection of the entire Jorgensen Forge EAA with EPA. The inspection is to determine whether the project elements for the Work are complete and consistent with the contract documents and the RAWP, to review compliance with the CQAP, to review field changes and change orders, and to verify that the performance standards have been achieved. Respondent shall certify that each discrete element of the Work has been constructed to meet the purpose and intent of the specifications. Respondent will conduct additional evaluations if deficiencies are identified.

Within seven (7) days of the pre-certification inspection, a Removal Action Pre-Final Certification Inspection Letter Report shall be submitted to EPA. The Removal Action Pre-Final Certification Inspection Letter Report shall include a summary of the major results under the CQAP and any field changes, as well as minutes from the pre-final certification inspection. The Removal Action Pre-Final Certification Inspection Letter Report shall outline the outstanding construction items, actions required to resolve those items, completion date(s) for those items, and a proposed date for final inspection, if necessary. The completion date for the items identified in the Removal Action Pre-Final Certification Inspection Letter Report shall be within thirty (30) days of the pre-certification inspection, unless a longer time is agreed to by EPA.

iv. Final Construction Inspections. Within thirty (30) days after completion of any Work identified in the Removal Action Pre-Final Certification Inspection Letter Report, if any, Respondent shall notify EPA for the purposes of conducting a final inspection of each discrete element of the Work. The final inspection shall consist of a walk-through inspection of each discrete element of the Work by EPA and Respondent. The Removal Action Pre-Final Certification Inspection Letter

II.2.4 Task 4 – Community Involvement Support

As requested by EPA, Respondent shall provide information supporting EPA's community involvement programs related to the Work, and shall participate in public meetings that may be held or sponsored by EPA to discuss activities concerning the Work. Respondent shall coordinate with EPA on any other community involvement activities it takes related to the Work.

Upon request by EPA, to support community involvement activities Respondent shall submit copies of plans, technical memoranda, raw data and other reports related to, or that could affect, completion of the Work to EPA except those documents that are privileged.

Respondent shall make all reasonable efforts to coordinate work under this Settlement Agreement to minimize disruption of normal use of the LDW and streets near the Jorgensen Forge EAA. Respondent shall address scheduling and coordination of Work under this Settlement Agreement, to the extent practicable, with other LDW projects, navigation, or Tribal fishing near the Jorgensen Forge EAA that may occur during implementation of the Work, and shall identify any known development projects anticipated on or near the Jorgensen Forge EAA.

II.2.5 Task 5 – Institutional Controls

EPA's and Respondent's expectation is that an environmental covenant pursuant to the Washington Uniform Environmental Covenant Act (UECA) will ultimately be necessary for the Jorgensen Forge EAA at a minimum, coordination and approval from EPA for redevelopment that may cause exposure of underlying sediments which will be protective on a point value basis for exposures to benthic invertebrate organisms (by meeting the SQS) but are not expected to be protective of human resident seafood consumers based on SWAC values in accordance with particularly current MTCA requirements. EPA and Respondent anticipate that the owner of the Jorgensen Forge sediments, and most other LDW sediments, the Port of Seattle (Port), will so covenant these properties, notwithstanding the unique quality of the Port's ownership rights as interpreted by the Washington Supreme Court. Should EPA be unable at any point after 2017 to secure a UECA covenant covering the Jorgensen Forge EAA from the Port for any reason, Respondent shall use best efforts to secure such a covenant for the Jorgensen EAA generally embodying the terms and conditions in a draft model covenant to be supplied at that time by EPA to Respondent.

		performance standards have been achieved. Respondent will provide EPA with results of performance standards evaluations at least seven (7) days prior to the pre-certification inspection.
9	Removal Action Pre-Final Certification Inspection Letter Report	Within seven (7) days of the pre-certification inspection
10	Removal Action Final Certification Inspection Letter Report, if necessary	Within thirty (30) days of the final certification inspection, unless a longer time is agreed to by EPA.
11	Draft Removal Action Completion Report	Within ninety (90) days of EPA confirmation that all Settlement Agreement requirements have been fulfilled
12	Final Removal Action Completion Report, if necessary	Within sixty (60) days of receipt of EPA comments on the Draft Removal Action Completion Report

Appendix B

Memorandum of Understanding

Coordination at the Boeing and EMJ/Jorgensen Transition Zone Boundary Sediment Cleanup Areas; Lower Duwamish Waterway

August 2007

PARTIES

This Memorandum of Understanding (MOU) is entered by and among the following signatories to the MOU:

- The Boeing Company (Boeing)
- Earle M. Jorgensen Company (EMJ)
- Jorgensen Forge Corporation (Jorgensen)

The above signatories as a whole are herein referred to as the "Parties". EMJ and Jorgensen are referred to herein as "EMJ/Jorgensen."

PURPOSE

The purpose of this MOU is to provide an attachment to separate Administrative Orders on Consent issued to the Parties by the U.S. Environmental Protection Agency (EPA) for the coordination and cooperation of the Parties in the cleanup of certain sediments and the associated sediment-shoreline bank interface areas in the Lower Duwamish Waterway (LDW). The cleanup areas are located adjacent to the Boeing Plant 2 Facility and the Jorgensen Facility (Figure 1). The sediment cleanup consists of Resource Conservation and Recovery Act (RCRA) corrective action by Boeing and Comprehensive Environmental Response Compensation and Liability Act (CERCLA) response action by EMJ/Jorgensen pursuant to the above-referenced EPA orders. This MOU defines the required coordination and cooperation between the Parties to plan and implement their respective cleanup actions, most particularly within the Transition Zone (described below). Key tasks include:

- Schedule
- Cleanup Action Design
- Bidding Process and Contractor Selection
- Permitting
- Construction Methods and Controls

- Source Control Implementation
- Monitoring (Construction and Long Term)
- Public Participation Process
- Agency Coordination Process
- Cleanup implementation

CLEANUP BOUNDARY DETERMINATION

EPA proposed a Transition Zone consisting of a portion of each of the adjacent Boeing and EMJ/Jorgensen sediment cleanup areas, specifically a portion of the south end of the Boeing cleanup areas and a portion of the north end of the EMJ/Jorgensen area. EPA proposed that all Parties would remain fully responsible for the Transition Zone under their respective separate EPA orders. In this way, EPA sought to avoid difficulties associated with affixing fault or blame for any post-cleanup-implementation issues that might arise at or on a precise boundary line between the two cleanup areas. The Parties strongly favored a bright line boundary within the Transition Zone and alternatively proposed the development of this MOU to allay EPA concerns with such a boundary line.

The Parties agree to the location of the Boeing and EMJ/Jorgensen Cleanup Boundary (Boundary) within the Transition Zone shown on Figure 1. As detailed herein, and solely for purposes of this MOU and implementation of the above-referenced EPA orders, Boeing shall undertake the cleanup of the specified sediment area north of the Boundary and EMJ/Jorgensen shall undertake the cleanup of the specified sediment area south of the Boundary. Neither this Boundary nor this MOU constitutes an admission of liability or a final allocation of responsibility between or among the Parties or any other person or entity with respect to sediment investigation or cleanup costs. The parties reserve all of their rights, including those under statute, common law, contract, and otherwise, to seek a reallocation of responsibility for the costs of investigating and cleaning up sediment contamination addressed in this MOU.

For the purposes of this MOU, the shoreline bank is defined as the material residing above the toe of the slope. The Parties shall each properly handle, dispose, and replace any shoreline bank materials at the sediment-bank interface incidentally affected by their respective sediment remedies.

The parties shall coordinate detailed features and requirements (e.g. slope stability and dredge depths) at the sediment and shoreline bank interfaces.

SELECTION OF AN EPA-APPROVED REMEDY AND PUBLIC REVIEW

The Parties shall communicate on a regular basis, and as may be directed by EPA, but no less than quarterly, throughout the development of their respective cleanup alternatives analyses to coordinate the key elements of pre-remedy selection and post-remedy selection design and implementation processes. The coordination will extend through permitting, bidding, selection of contractors, construction, source control, and monitoring. The tasks to be coordinated include:

1. Schedule
2. Cleanup Action Design
3. Bidding Process and Contractor Selection
4. Permitting
5. Construction Methods and Controls
6. Source Control Implementation
7. Monitoring (Construction and Long Term)
8. Public Participation Process
9. Agency Coordination Process
10. Cleanup implementation

Any Party may proceed with their work in the absence of timely communication and coordination or progress by another Party, unless otherwise directed by EPA. A determination by any Party of a failure by another Party to act in a timely manner, and the basis for that determination, will be documented in correspondence between the Parties first, and if necessary with EPA.

Schedule

The Parties will prepare comprehensive and coordinated schedules that will be included in their respective alternative analyses, cleanup design and construction documents. The schedules will be managed so that the respective portions of both projects within the Transition Zone that could benefit from coordinated activities are constructed within the same construction window(s), to the extent this is technically feasible. Any determination by any Party that this is

not technically feasible must be approved by EPA in writing. These activities include, at a minimum, Agency approvals and oversight, permitting, contract administration, mobilization, dredging, monitoring, equipment staging and demobilization. Construction sequencing for the Boeing and EMJ/Jorgensen cleanup areas will be planned to limit dredge residuals and the potential for recontamination due to construction-related activities in either cleanup area.

Cleanup Action Design

The Parties will individually develop EPA-approved design and construction documents using separate consultants for the cleanup of their respective sediment areas. During the design and construction processes, the Parties will meet, as necessary, to discuss integration of the cleanup areas in the Transition Zone along the Boundary and shoreline bank interfaces. In developing their respective designs and in implementing their respective cleanups, the Parties will coordinate on dredge depth excavations to ensure required contaminated sediment removals, slope connections and matching grades at the Boundary and shoreline bank interfaces.

Design and implementation features necessary to match the sediment cleanup areas will be coordinated between the Parties and will be finalized in consultation with EPA. The final design and construction documents will be submitted separately but contemporaneously by Boeing and EMJ/Jorgensen to EPA for parallel reviews and approvals.

Bidding Process and Contractor Selection

The Parties anticipate finalizing the bid process mechanisms as part of the design process. Separate contracts will be issued for the sediment cleanup areas on each side of the Boundary; however, the contractor selection process will be coordinated and the request for bids will be submitted contemporaneously. The Parties shall coordinate the contract terms and bid schedule, including payment structure, construction sequencing requirements, compliance with permit conditions, approach to residuals management, and implementation of confirmation sampling requirements. Though multiple contractors under separate contracts may be used for the remediation inside and outside of the Transition Zone, work within the Transition Zone, shall be jointly implemented simultaneously as if it were a single project.

Permitting Requirements

EMJ/Jorgensen will comply with the substantive requirements of any permits waived under Section 121(e) of CERCLA for its cleanup area. Boeing will secure any necessary permits for its cleanup area. This process will be coordinated, such that compliance activities are performed in an efficient and consistent manner under each applicable statute.

Construction Methods and Controls

During design and the development of construction documents, the Parties shall establish consistency in construction methods and controls that are to be specified in the design process and which are to be performance-based. The methods and controls will be chosen, subject to EPA approval, so as to limit dredge residuals and recontamination due to construction-related activities in either of the Parties respective cleanup areas.

Source Control Implementation

To the extent practicable, or to the extent required by EPA or the Washington Department of Ecology (Ecology), and as authorized by the Parties respective orders, the Parties will implement source control measures at their respective facilities, subject to EPA approval, prior to commencing implementation activities in the LDW to avoid recontamination of sediments in the LDW. Where source control measures overlap, the Parties will coordinate mitigation measures, as necessary. EMJ/Jorgensen anticipate that Jorgensen Forge will enter into an Agreed Order with the Washington State Department of Ecology (Ecology) to identify and, as necessary, address existing or potential sources of LDW contamination from the Jorgensen Facility.

Monitoring

The Parties will prepare separate yet integrated construction and long-term monitoring documents (i.e., with shared formats, definitions, schedules, methods, etc.) subject to EPA approval. Accordingly, the Parties will coordinate the Construction Quality Assurance Plan, or its equivalent, for each of their respective cleanup areas to confirm that similar protocols for monitoring contractor performance in the vicinity of the Transition Zone are followed during construction. Each respective plan will identify the methods for communicating necessary design changes and corrective actions identified during construction monitoring of cleanup activities within the vicinity of the Transition Zone with the potential to adversely affect the

sediment and/or sediment-bank interface in each sediment cleanup area.

The Parties will coordinate the Operations Maintenance and Monitoring Plan, or its equivalent, for each respective cleanup area for consistency and integration of long-term monitoring objectives as approved by EPA in the Parties' respective EPA Orders in the vicinity of the Transition Zone. To the extent practicable or to the extent required by EPA in the Parties' respective EPA Orders, long-term monitoring of the sediment cleanup located in the vicinity of the Transition Zone will be coordinated on a similar timeline and involve the generation of figures illustrating sampling locations, laboratory analytical data, and applicable field notes collected by either Party.

Public Participation Process

The Parties will coordinate prior to and in the course of any public review periods and community involvement activities.

Agency Participation Process

Shawn Blocker is the EPA Project Manager or Coordinator for both the Boeing RCRA and EMJ/Jorgensen CERCLA sediment cleanups. The Parties agree that coordination of the sediment cleanups is central to the Parties reaching regulatory closure with EPA and Ecology.

Schedule

Detailed schedules for the respective sediment cleanups will be coordinated when the respective EPA approvals occur.

Cleanup Implementation

Cleanup Implementation shall be pursuant to final EPA-approved implementation submission pursuant to the Parties' respective EPA orders, and shall be cooperatively coordinated to the extent practicable, and to the extent required by EPA and the Parties respective EPA Orders.

No Third Party Beneficiaries

This MOU binds and inures to the benefit of only the Parties, and to EPA as an attachment to the Parties respective EPA orders, and does not create any rights for any person or entity other than EPA, Boeing and EMJ/Jorgensen.

Accepted by:

Steven L. Shestag Sept 13 2007

Steven L. Shestag Date
THE BOEING COMPANY

E. Gilbert Leon Jr. Date
EARLE M. JORGENSEN COMPANY

Ron Altier Date
JORGENSEN FORGE CORPORATION

Accepted by:

Steven L. Shestag Date
THE BOEING COMPANY

9.20.07

E. Gilbert Leon Jr. Date
EARLE M. JORGENSEN COMPANY

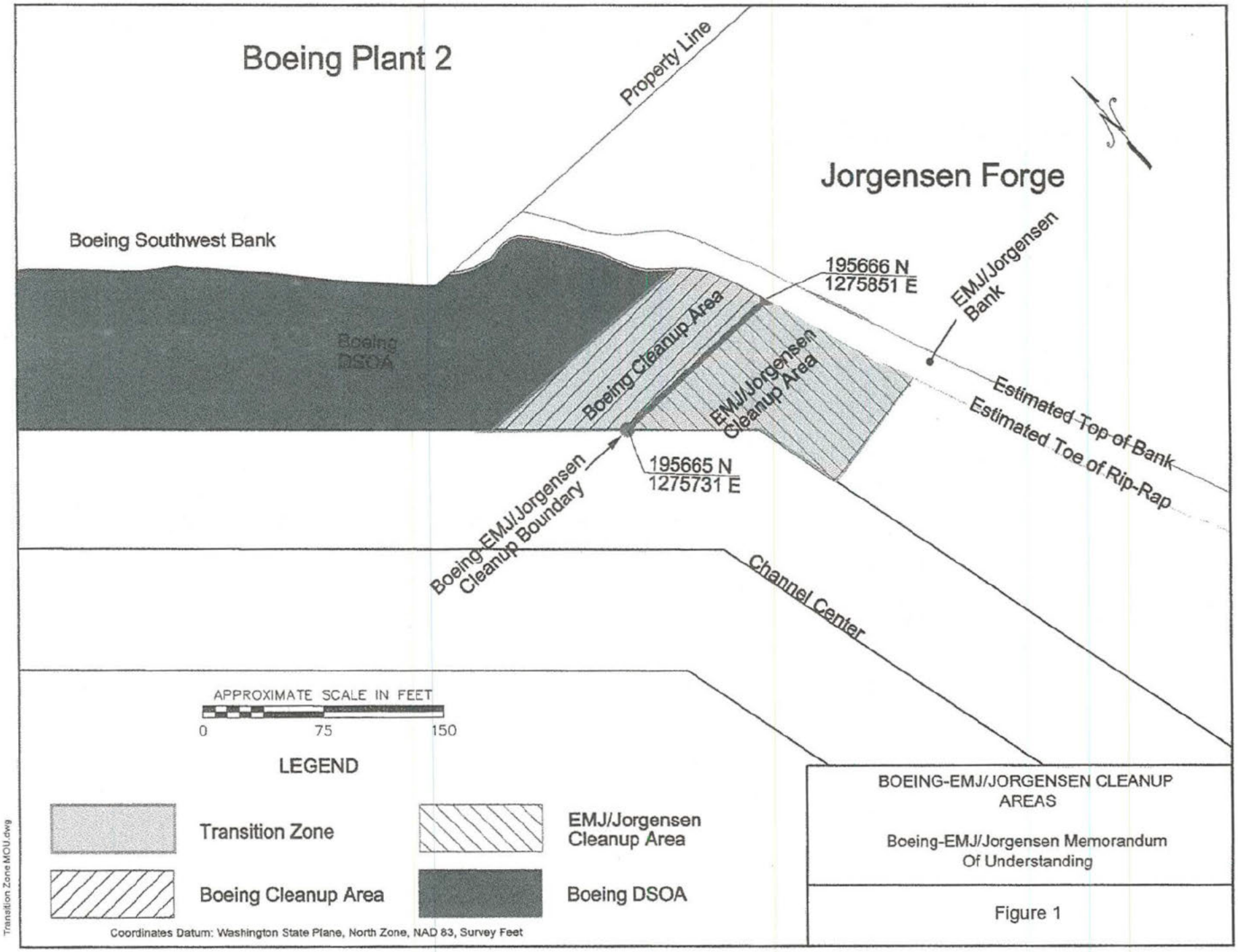
Ron Altier Date
JORGENSEN FORGE CORPORATION

Accepted by:

Steven L. Shestag Date
THE BOEING COMPANY

E. Gilbert Leon Jr. Date
EARLE M. JORGENSEN COMPANY

Ron Altier 9-10-07
Ron Altier Date
JORGENSEN FORGE CORPORATION


Boeing Plant 2
Property Line
Jorgensen Forge
Boeing Southwest Bank
195666 N
1275851 E
EMJ/Jorgensen Bank
Boeing DSOA
Boeing Cleanup Area
EMJ/Jorgensen Cleanup Area
Estimated Top of Bank
Estimated Toe of Rip-Rap
195665 N
1275731 E
Boeing-EMJ/Jorgensen Cleanup Boundary
Channel Center
APPROXIMATE SCALE IN FEET
0
75
150
LEGEND
Transition Zone
EMJ/Jorgensen Cleanup Area
Boeing Cleanup Area
Boeing DSOA
Coordinates Datum: Washington State Plane, North Zone, NAD 83, Survey Feet
BOEING-EMJ/JORGENSEN CLEANUP AREAS
Boeing-EMJ/Jorgensen Memorandum Of Understanding
Figure 1
Transition Zone MOU.dwg

Appendix C

ACTION MEMORANDUM

DATE: July 29, 2011

SUBJECT: Action Memorandum for a Non-Time-Critical Removal Action at the Jorgensen Forge Early Action Area of Lower Duwamish Waterway Superfund Site, Seattle, Washington

FROM: Shawn Blocker
Project Coordinator

TO: Richard Albright, Director
Office of Air, Waste and Toxics

Site ID: U.S. EPA Docket No. CERCLA 10-2003-0111

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the selected non-time-critical removal action (NTCRA) described herein for the Jorgensen Forge Early Action Area (EAA) of the Lower Duwamish Waterway (LDW) Superfund Site, Seattle, King County, Washington (Figure 1). The Jorgensen Forge EAA NTCRA consists of the removal and disposal of approximately 1.6 acres of contaminated marine sediments (Figure 2). The proposed NTCRA is expected to be conducted by potentially responsible parties (PRPs), Earle M. Jorgensen Company (EMJ), and Jorgensen Forge Corporation, (collectively, "Jorgensen"), with oversight by EPA pursuant to an EPA enforcement order, preferably on consent, to be negotiated or otherwise issued after the issuance of this Memorandum. These PRP's performed the recently completed Engineering Evaluation/Cost Analysis (EE/CA) for this NTCRA pursuant to such an order.

II. SITE CONDITIONS AND BACKGROUND

The CERCLIS ID No. is WAN0002329803 and the Site ID No. is 10DT.

The LDW Superfund Site consists of an approximately 5.5- mile engineered waterway, formerly the northern portion of the Duwamish River which flows into Seattle, Washington (see Figure 1). It was listed on the National Priorities List (NPL) on September 13, 2001. EPA and the Washington State Department of Ecology (Ecology) jointly issued an order on consent pursuant to CERCLA and the state Model Toxics Control Act (MTCA) for a remedial investigation and feasibility study (RI/FS) for the LDW Site on December 21, 2000, to The Boeing Company (Boeing), City of Seattle (City), Port of Seattle (Port) and King County (County). A Record of Decision is anticipated within the next few years. EPA and Ecology also agreed for their mutual convenience in a Memorandum of Understanding that EPA will generally be lead agency for in-water portions of the LDW Site and Ecology will generally be lead agency for upland source control, and that the Agencies may alter these lead-support roles at any time for any portions of the LDW Site.

The Agencies have followed this general division of responsibility for the Jorgensen Forge facility (Jorgensen Forge or Facility) as a whole. The Jorgensen Forge EAA is a portion of one of five EAAs identified during the RI by EPA and Ecology to address sediment hot spots. That EAA included contaminated LDW sediments fronting both Jorgensen Forge and the larger adjoining Boeing Plant 2 facility immediately to the north. Plant 2 is a Resource Conservation and Recovery Act (RCRA) treatment, storage, disposal (TSD) facility whose sediments will be addressed, contemporaneously with Jorgensen Forge sediments, as RCRA corrective action pursuant to an EPA RCRA Order on Consent issued to Boeing. For the purposes of this Memorandum, Jorgensen Forge EAA will refer to the Jorgensen Forge sediments only, unless otherwise stated, since this Memorandum does not address the Boeing Plant 2 facility sediments except for a small Transition Zone overlapping the sediment boundary between the facilities' separate areas of responsibility that both Jorgensen and Boeing will have full responsibility for in their separate EPA Orders. A separate MTCA Order on Consent for Jorgensen Forge uplands has been issued by Ecology, and it and any subsequent Facility uplands orders should be issued and overseen by Ecology.

For purposes of this NTCRA, the area to be addressed is the 1.6 acres of sediments and slope adjacent to Jorgensen Forge, including the Transition Zone. The Facility was originally developed by the U.S. Navy in 1942 for the production of naval equipment (e.g., propeller shafts). Facility operations included forging, heat-treating, and machining. In 1945, Isaacson Iron Works purchased the property and equipment from the U.S. Navy and continued to operate until 1965 as a fabricator of structural steel, tractors, and road equipment. In addition, Bethlehem Steel operated a steel distribution center on the northwestern portion of the Facility from approximately 1951 to 1963. From 1965 to 1992, the Facility was owned and operated by EMJ and continued to operate in a similar fashion. From 1992 to the present, the Facility has been owned and operated by Jorgensen Forge Corporation.

A. Site Description

1. Removal Site Evaluation

The Jorgensen Forge EAA is characterized by gently sloping intertidal mudflat habitat, with a steep partially vegetated riprap bank. It is bounded to the east by a relatively flat Facility upland area, to the north by Boeing Plant 2 sediments, to the south by sediments adjacent to a former Isaacson facility now also owned by Boeing, and by additional LDW sediments to the west. The area to be remediated is depicted on Figure 2.

The Bethlehem Steel operations noted above consisted of cutting prefabricated steel rods to customers' specifications (Anchor and Farallon, 2008a). The above-ground structures associated with the distribution center were removed shortly after these operations ceased. The only significant subsequent development occurred in the late 1960s in the Facility's EMJ era, when the westernmost portion of the main manufacturing building was extended adjacent to the abutted sheetpile and concrete panel wall on the southwest corner of the Facility.

A review of aerial photographs identified the general types of land use activities and shoreline modifications adjacent to the remedial action boundary (RAB). Prior to the construction of the Facility, the upland area directly adjacent to the RAB was undeveloped land with a small embayment and the former Slip 5 to the south. Upland development was initiated circa 1942, and a 1944 aerial photograph

shows a large L-shaped building occupying the eastern and southern portion of the upland property (which still exists today) and a railroad trestle extending across the embayment.

Some of the piles that historically supported the trestle still exist along the RAB shoreline. No information regarding the use of the railroad trestle or any associated aquatic land uses were identified. By 1946, the railroad trestle is no longer present and the large embayment and adjacent shoreline areas were filled to effectively straighten the shoreline. By 1956, the Bethlehem Steel distribution center had been constructed on the northwest portion of the property. By 1969, it had been removed and the sheetpile wall installed adjacent the LDW.

Three storm drains service the property and discharge into the LDW subject to a Washington State General Industrial Discharge permit. Two additional storm drains, now abandoned, historically discharged from the Facility into the LDW. These two storm drains are identified as an inactive Boeing 15-inch storm pipe and directly-adjacent an inactive 24-inch property line storm pipe that transit the northern Facility property boundary (Figure 2). Historical inputs to the Boeing 15-inch property line storm pipe were solely from Plant 2. Stormwater inputs to the 24-inch property line storm pipe occurred historically from Plant 2, the Facility, Boeing Field/King County International Airport (KCIA) and City of Tukwila stormwater drainage. Boeing completed a removal action pursuant to an EPA Order on Consent in March of 2011. It consisted of cleaning and closure of the concrete portions of the full extents of both storm pipes near the northern boundary of the Facility to remove and prevent continued discharge of stormwater through known PCB contamination to the LDW.

For this NTCRA, the primary contaminants of concern (COCs) are PCBs and metals in the sediments and adjacent slope. The primary source of PCB contamination is historic releases from Boeing Plant 2, including from the above mentioned storm drains. Releases from Facility operations are the primary source of the metals.

2. Physical Location

The Jorgensen Forge EAA is situated on the west bank of the LDW, approximately ½ mile south of the South Park Bridge. The Facility occupies approximately 20 acres at 8531 East Marginal Way South in Seattle, Washington, and is located directly east of the RAB. The Facility contains an approximately 124,000-square-foot building of prefabricated steel that houses a Machine Shop Area, Forge Shop Area, Hollowbore Area, Melt Shop Area, Heat Treat Area, and Shipping Area (Figure 2). The Facility also contains a building that houses an Aluminum Heat Treating Area and several smaller buildings used for offices, a metallurgical laboratory, and storage areas.

The Facility is currently used as a steel and aluminum forge that produces custom steel and aluminum parts forged and machined to high precision specifications for various industrial clients. The major operations conducted include:

- Melting scrap steel and forming the molten steel into ingots
- Forging the steel ingots into billets and/or shape forgings
- Heat-treating the forged steel and purchased aluminum products
- Grinding and machining the steel billets to required specifications
- Ring rolling and/or expanding the aluminum products to required specifications

The LDW, including the Jorgensen Forge EAA, is within the treaty-protected fishing grounds of the Muckelshoot Indian Tribe, and in very close proximity to those of the Suquamish Indian Tribe. No seafood from the LDW other than salmonids should be consumed by people according to advisories issued by the Washington State Department of Health. Recreational activities within and near the EAA include kayaking, canoeing, and motor boating.

Threatened or endangered species potentially occurring within the local area include Chinook salmon (*Oncorhynchus tshawytscha*), Puget Sound steelhead (*Oncorhynchus mykiss)* and Bull trout (*Salvelinus confluentus*). The LDW including the EAA are designated critical habitat for Chinook salmon and bull trout. Designated habitat for steelhead is currently under development.

There are no known potential historical landmarks and/or structures with historical significance identified at the Jorgensen Forge EAA.

Specific meteorological data for this area is as follows: The average rainfall/snowfall is 36"/year, the average temperature is 53°, the average high 79°, the average low 30°, extreme high 95°, extreme low 16°, the average/peak wind speeds are 8 to 39 mph with gusts to 53 mph with the prevailing wind direction to the south.

3. Site Characteristics

Jorgensen Forge sediments cover approximately 1.6 acres and consist primarily of intertidal and subtidal sediment. The EAA extends from the top of the shoreline bank; at an elevation of approximately +13.8 ft mean lower low water (MLLW), into the LDW, at an elevation between 0 and -19 ft MLLW, and terminates at the federal navigation channel. It is bordered by Boeing Plant 2 sediments to the north, Boeing former Issacson facility sediments to the south, the LDW to the west and the Jorgensen Forge upland Facilty to the east. No portion of the Jorgensen Forge EAA is federally-owned.

Nearly all of the Jorgensen Forge shoreline is steep with portions covered by vegetation, underlain with concrete slabs, rock, debris, and includes a sheetpile/concrete wall to the south.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

Sediments: Documented hazardous substances releases include PCBs, metals, and semivolatile organic compounds (SVOCs) in sediments and/or shoreline bank soils above the Washington State Sediment Management Standards (SMS) Sediment Quality Standards (SQS) which were used to establish the sediment boundaries of the EAA, and as set forth in Section V.4 below, are the removal action levels (RvALs) for this NTCRA. Total PCB SQS exceedances were identified in surface and subsurface sediment over a wide range, both vertically and horizontally. Additionally, all identified surface and subsurface SQS exceedances for the full range of SMS analytes were co-located with total PCB SQS exceedances. Only two subsurface samples contained SQS exceedances for hazardous substances (arsenic, lead, and zinc) in addition to PCBs.

Detected organic carbon (OC) normalized PCB concentrations in sediments ranged from 0.3 to 1,251 mg/kg OC. Concentrations are expressed in this manner rather than as dry weight concentrations for

purposes of comparison to the SMS numerical criteria which are expressed as OC normalized concentrations.

Four metals were detected within the surface sediment and bank of the EAA above SQS. Chromium was so detected in five samples with a maximum concentration of 10,600 mg/kg. Copper was detected in two samples with a maximum concentration of 2,820 mg/kg. Lead was detected in 7 samples with a maximum concentration of 64,900 mg/kg and zinc was detected in 8 samples with a maximum concentration of 17,500 mg/kg.

Four semi-volatile organic compounds (SVOCs) were also detected above the SQS within the sediments and bank of the EAA. The four SVOCs included flourene, phenanthrene, butyl benzyl phthalate, and phenol, ranging in concentrations from 8.9 to 1,100 mg/kg. All of the SVOCs are contained within the PCB footprint.

Shoreline Debris Fill. An outfall reconnaissance survey performed in May 2003 identified two debris piles (the North Debris Pile and the South Debris Pile) at the toe of the bank, slightly north of the sheetpile wall area near Outfall 004. The debris piles are composed of black solid asphalt-like material containing nails and other miscellaneous molten metal debris. Six samples were collected in August 2004 consisting of sediment entrained in the debris and composited. The total PCB concentrations detected in the North Debris Pile and the South Debris Pile were 2.34 and 2.06 mg/kg, respectively. Copper and lead concentrations significantly exceeded the SQS criteria in the samples collected from both debris piles, and chromium and significant zinc SQS exceedances were detected in the sample collected from the North Debris Pile.

Shoreline bank-face fill sampling was conducted in August 2004. This sampling included collection of eight fill samples (SS-1 through SS-8) for analysis of total PCBs and metals. The bank-face total PCB concentrations range from 0.0255 to 4.54 mg/kg (Table 2-4). The total PCB concentrations detected at stations SS-1, SS-5, and SS-8 were 0.3230, 0.1967, and 0.1696 mg/kg, respectively. The concentrations of PCBs in soil samples collected from sample locations SS-2, SS-3, SS-6, and SS-7 ranged from 1.443 mg/kg at station SS-3 to 4.54 mg/kg at station SS-6.

Sediment Seep Water: Sediment seep surveys (fluids visually observable seeping through the sediments) and sampling were conducted as part of the Phase 2 RI for the LDW site. Seep water samples were collected and analyzed for filtered and unfiltered metals, SVOCs, PCBs, organo-chlorine pesticides, volatile organic compounds (VOCs), total organic carbon (TOC), dissolved organic carbon (DOC), and total suspended solids (TSS). In addition, conventional water quality parameters (conductivity, temperature, dissolved oxygen, pH, and oxidation-reduction potential) were measured and seep flow rate was calculated. There were no detections of SVOCs, VOCs, organo-chlorine pesticides, PCBs, TOC, and DOC above the laboratory reporting limits. Total suspended solids (TSS) was estimated at 4.3 milligrams per liter (mg/L). Concentrations of arsenic, cadmium, copper, lead, mercury, nickel, silver, and zinc were detected above the laboratory method reporting limits, but below the screening levels identified to be protective of LDW surface water.

Sediment Porewater: Porewater samples were collected from six nearshore sediment stations as part of the Phase 2 LDW RI adjacent to the northwest corner of the Jorgensen Forge Facility to assess risk to benthic invertebrates. Four VOCs were detected at the following maximum concentrations: 1,1-Dichloroethane: at 0.3 micrograms per liter (µg/L), Cis-1,1-Dichloroethene with a maximum detection

of 1.7 µg/L, trichloroethelyne (TCE) at 0.2 µg/L and Vinyl chloride and a maximum detection of 13 µg/L.

Upland Soil: This data include surface soil samples from the chip storage and slag storage areas on the southwest portion of the Facility, and subsurface soil samples to a maximum depth of 16 feet below ground surface (bgs) across the Facility since 1994. PCBs have only been detected in soils on the western or shoreline portion of the Facility, except for a single shallow subsurface soil sample collected at a depth of 2 feet bgs from the Facility interior.

Upland Groundwater: Forty-two groundwater samples have been collected from 14 monitoring wells and 17 borings on the Facility and analyzed for PCBs. PCBs have not been detected in groundwater, with the exception of a June 2003 groundwater sample collected from monitoring well MW-6. Total PCBs, consisting of a combination of Aroclor 1254 and Aroclor 1260, were detected at a concentration of 0.41 µg/L, which exceeds the screening level of 0.27 µg/L. The June 2003 groundwater sample collected from monitoring well MW-6 was collected by Boeing to evaluate the presence, nature, and extent of PCBs in soil and groundwater attributable to releases from Plant 2. This investigation included the collection and laboratory analysis of soil and/or reconnaissance groundwater samples from 10 borings on the Facility for PCBs.

Groundwater samples collected as part of ongoing groundwater monitoring and sampling of the Facility by Jorgensen in April 2003 (prior to the June 2003 Boeing investigation) did not detect concentrations of PCBs above the laboratory practical quantitation limit (PQL) in the groundwater sample collected from monitoring well MW-6. In addition, the laboratory analytical results of a groundwater sample collected by Jorgensen from monitoring well MW-6 during the January/February 2008 groundwater monitoring and sampling event did not detect PCBs in groundwater above the laboratory PQL. No other COCs have been detected in uplands monitoring wells.

The migration pathway for discharge of groundwater is complete but concentrations of PCBs have not been detected in groundwater exceeding the screening levels, with the exception of single anomalous detections of PCBs in groundwater collected from single monitoring wells located in discrete areas of the Jorgensen Forge EAA.

5. NPL status

The Jorgensen Forge EAA is geographically within the LDW Superfund site listed on the NPL on September 13, 2001.

6. Maps, pictures, and other graphic representations

Relevant figures are attached to this memorandum.

B. Other Actions

2. Current actions – Storm drain removal.

Cleanup of the LDW under CERCLA (Superfund), other than in EAAs, will be remedial (rather than removal) action. Jorgensen Forge was identified as an EAA (or part of an EAA) that required cleanup as a result of risks to human health and the environment from high PCB and metal concentrations in the

sediments and soils, groundwater (as a source to sediments and surface water) and surface water. There are no other actions associated with the Jorgensen Forge EAA except as follows. Potentially significant nearby sources of recontamination were considered during the EE/CA.

Potentially significant Jorgensen Forge upland sources of recontamination, particularly for metals, were continued erosion of bank material and a 24 inch storm drain line that drained portions of Boeing Field and East Marginal Way. The 24-inch storm drain line was the primary source of potential recontamination from PCBs. For this reason, removal of the banks and surface water management are part of this NTCRA. Contaminant loading from the 24 inch storm drains was addressed through a separate NTCRA completed in May of 2011 with partial removal and plugging of the 24 inch storm drain line.

C. State and Local Authorities

1. State and local actions to date

As part of their work sharing agreement for the joint management of the LDW Site, EPA and Ecology agreed EPA would be the lead agency for the sediments and bank of this EAA. Ecology has the lead for the upland portion of the site and is currently addressing it under a MCTA Order. The Muckelshoot Indian Tribe, Ecology, and the Duwamish River Cleanup Coalition (DRCC), the LDW Technical Assistance Grant (TAG) recipient have followed the development of this NTCRA and are supportive of the cleanup decision.

2. Potential for continued State/local response

Coordination with Ecology will continue throughout the NTCRA. Tribes (Muckelshoot and Suquamish) and other stakeholders will continue to be fully informed.

D. Tribal Interests

For the LDW Site, including EAAs and source control actions, EPA has initiated formal consultation with the Muckleshoot and Suquamish Tribes. These Tribes have participated in document reviews, special meetings upon request, and frequent coordination meetings such as quarterly updates and project-specific briefings. For this removal action, EPA has provided information to the Tribes at LDW quarterly meetings and has asked the Tribes if they have any concerns about the proposed removal action. Most recently, in December of 2010, EPA provided a project update to the Muckleshoot Tribe and it did not express any environmental or cultural resources concerns related to the removal action for EPA to consider.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The current conditions at this EAA meet the following factors which indicate that it is a threat to the public health or welfare or the environment, and a removal action is appropriate under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) , 40 C.F.R. § 300.415(b)(2). Any or all of these factors may be present at a site, and any one of these factors may determine the appropriateness of a removal action.

Consistent with EPA guidance for conducting an EE/CA, a streamlined risk evaluation was conducted for the Jorgensen Forge EAA (Section 3.0 of the EE/CA) to assess risks from exposure to contaminated sediments and upland soils in the absence of a removal action. The streamlined risk assessment is based on this EAA serving as a source of contamination to the LDW and the resultant unacceptable levels of contaminants in fish and shellfish that pose a risk to consumers of resident LDW seafood based on Tulalip Tribe's fish consumption data. The LDW RI risk assessment has also been used and made a part of the Administrative Record for this NTCRA.

1. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants (300.415(b)(2)(i)).

Primary exposure pathways for human health and ecological risks are direct contact with contaminated sediment, and/or contaminated bank soils, and ingestion of contaminated LDW fish and/or shellfish by people and ecological receptors of which river otter are the most sensitive according to the LDW ecological risk assessment. Arsenic, PCBs, and cPAHs are human carcinogens which accumulate and magnify in the aquatic food chain. The remaining detected constituents (lead, zinc, copper, and chromium) are not considered carcinogenic but are nevertheless toxic to aquatic organisms and/or people in concentrations that exceed regulatory or risk-based threshold criteria (RBTCs).

As noted above, because sediments adjacent to both the Plant 2 and Jorgensen Forge facilities contain commingled releases the LDW CERCLA process initially administratively identified them as a single EAA. Amendments to Boeing's and Jorgensen's respective RCRA and CERCLA Orders with EPA require that the Plant 2 and Jorgensen Forge respective early action cleanups be coordinated to address sediments particularly in what has been called the "Transition Zone" between the two facilities at the south end of Plant 2 sediments and the north end of Jorgensen Forge sediments. PCB releases from the Jorgensen Forge facility are believed by EPA to be minor compared to those from Plant 2. In addition to comingled PCB releases, metals contamination believed by EPA to have been released primarily from the Jorgensen Forge facility will be addressed in the Transition Zone. Since these sites are planned to be remediated cooperatively, the following is an explanation of RCRA process under which cleanup standards for Plant 2 were developed, and how they are completely consistent with the development of cleanup standards for other LDW EAAs such as the T-117 EAA, and for this EAA.

The RCRA corrective action process for Plant 2 required the development of Target Media Cleanup Levels (TMCLs), and ultimately Final Media Cleanup Levels (FMCLs), for all contaminated media and hazardous constituents of concern at the facility. TMCLs are set at levels that are protective of human health and the environment. They are similar to Preliminary Remediation Goals (PRGs) in the CERCLA remedial process. Generally, federal or state regulatory standards establish minimally acceptable amounts or concentrations of hazardous constituents (generally hazardous substances under CERCLA and MTCA) that may remain in or be discharged to the environment, or minimum standards of performance for the selected remedy. Risk-based Threshold Concentrations (RBTCs, at times referred to as RBCs without the word "Threshold") based on risks to human health or the environment often dictate setting more stringent standards for cleanup or remedy performance. For hazardous constituents that bioaccumulate and magnify through the food chain, like PCBs, TMCLs are often based on RBCs which are significantly more stringent than regulatory criteria (e.g., regulatory criteria may have been established for a different purpose or at an earlier time). While CERCLA sites are required to perform

baseline risk human health and ecological risk assessments as part of a remedial investigation feasibility study (RI/FS), RCRA sites may not, and the Boeing Plant 2 RCRA facility investigation/corrective measures study (RFI/CMS) did not. The TMCL/FMCL process outlined above is an alternative means to CERCLA baseline risk assessments for the development of RBCs. Consistent with EPA's One Cleanup Program Initiative, the CERCLA remedial action and RCRA corrective action processes yield fundamentally consistent results.

The only relevant minimum regulatory criteria or standards for Jorgensen Forge and LDW-wide sediments are in MTCA and the SMS (which are part of MTCA), which are CERCLA applicable or relevant and appropriate requirements (ARARs), and are followed without that designation under RCRA. The SMS contain specific numerical standards for the protection of benthic invertebrate organisms which live in marine sediment (and are a critically important part of the food chain). There are however, no SMS or other state numerical standards for the protection of human health, including human consumers of fish and shellfish, or for other biological resources such as birds, fish, or other mammals such as river otter. TMCLs for protection of these receptors at Boeing Plant 2 were therefore RBCs.

The SMS expressly provide (as do RCRA, CERCLA and MTCA generally) that all sediment cleanups must be protective of human health and the environment (WAC 173-204-570(5)). They also provide that SMS criteria for the protection of human health be developed on a site-specific basis (generally through RBCs) (WAC 173-204-570(3)(v)). For hazardous constituents for which benthic invertebrate organisms are the most sensitive receptor of concern (e.g., copper and zinc), the SMS numerical criteria are the TMCLs/FMCLs, and are applied on a point basis within the biologically active zone of the sediments (identified as the top 60 cm of the Plant 2 sediments). Sediment cleanup standards based on the SMS numerical criteria are established on a site-specific basis within an allowable range of contaminant concentrations. The SQS, also called the sediment cleanup objective, and Cleanup Screening Level (CSL), also called the minimum cleanup level (MCUL), define this range. WAC 173-340-570(4) specifies that SMS-based sediment cleanup standards shall be as close as practicable to the SQS but shall in no case exceed the minimum CSL. For this reason, for the purpose of developing TMCLs that are protective of benthic invertebrate receptors and to analyze alternatives accordingly, the SQS were used in the Boeing Plant 2 Statement of Basis for contaminants for which benthic invertebrates are the most sensitive receptor.

MTCA requires that protection of human health be based on an excess cancer risk of one in a million (1 x 10-6) for individual carcinogens, and one in one hundred thousand (1 x 10-5) for all carcinogens collectively at a site, as well as a hazard index of one for other human health risks, and for ecological risks. This is equal to EPA's hazard index standards, but considerably more stringent than EPA's excess cancer risk standards (an acceptable range between 1 x 10-4 and 1 x 10-6). Washington's excess cancer risk standards are therefore used by EPA for sites or facilities in Washington under CERCLA and RCRA. There are no state or federal numerical standards for the protection of human health, including people who eat fish and shellfish, or for other biological resources such as birds, fish, or other mammals such as river otter. Instead, cleanup levels for protection of these groups are derived, as set forth above, from RBCs. Human health RBCs are the most stringent and therefore the most important. It is EPA's long-standing policy that cleanup levels must be calculated to protect the most sensitive receptors or populations. Regional tribal members and Asian and Pacific Islander populations are known to consume more fish and shellfish than other populations. The Muckleshoot Tribe has a treaty-granted fishery in the LDW that is currently limited to salmon which live most of their lives in the open ocean. The

Suquamish Tribe's treaty-granted usual and accustomed fishing area is just north and west of the LDW and includes fish that use the LDW as part of their home range. There are no reliable studies establishing how much fish and shellfish is consumed from the LDW generally, and no reliable studies of Muckleshoot Tribe consumption rates. Due to longstanding King County Department of Health advisories warning against consumption of resident seafood from the LDW, any study of resident LDW fish and shellfish consumption would not be appropriate because it would likely be biased extremely low.

Consequently, EPA selected a study of the Tulalip Tribe's seafood consumption rate as a surrogate for the Muckleshoot Tribe, because the Tulalip Tribe fishes in a geographically similar area and is believed by EPA to have sufficiently similar overall seafood consumption patterns. A consumption rate of 97.6 grams/day of resident seafood (just over 3.5 ounces) has been used for all LDW sediment cleanup decision making. Region 10 has at times in the past made assumptions that led it to believe SMS standards were more stringent than human seafood consumption-based RBCs. Among these were assumptions that if a resident seafood species were unavailable, consumers of resident seafood would not substitute an equal amount of available resident species. Another was "fractioning" contaminant contributions to receptors within a water body among contributing sites or facilities. The SQS concentration for PCBs is 12 ppm total organic carbon normalized (ppm-OC). A protective resident LDW human seafood consumption rate based on this standard (and accepted calculations commonly based on food web modeling to derive the relationship between sediment concentration and tissue concentration of affected seafood) would be less than 1 ounce per day. Such a consumption rate would not be protective of higher seafood consuming populations.

Another important consideration with regard to RBCs as cleanup levels is that they are never set below background concentrations or practical quantitative limits (PQLs). Setting numerical cleanup levels below background is impractical due to recontamination to background concentrations. RBCs below PQLs, which define what can be measured, are similarly impractical. MTCA requires final cleanups for which RBCs are more stringent than background to achieve natural background as defined in MTCA (WAC 173-340-700(6)(d), among other places, i.e., every media cleanup section through the 700s). (Cleanups that use area or anthropogenic background as remediation levels are interim actions, WAC 173-340-360(4)(d).) At completion of the proposed Jorgensen Forge sediment removal, the backfill covering the remediated area will meet MTCA natural background (identified in EPA and Ecology approved LDW RI/FS deliverables as the Bold Survey (EPA 2008), or for metals, Ecology's 1994 Soil Background levels), or RBC based FMCLs for all hazardous constituents as established in the Plant 2 Sediments Final Decision for RCRA Corrective Action.

Surface water (i.e., the water column) is also a medium of concern in the LDW, and was for Plant 2 corrective action to the following extent. Corrective action addresses releases of hazardous constituents in all media at or from a facility, and though the water column is part of the LDW Superfund Site, once contamination in Plant 2 sediments and upland soil and groundwater have been controlled and are no longer moving into the LDW, exceedances of water quality standards in the LDW are a LDW-wide concern no longer affected by Plant 2.

Ultimate PCB and other bioaccumulative contaminant levels in sediments and surface water for the entire LDW will be determined at the end of the LDW CERCLA/MTCA process. EPA in conjunction with Ecology will consider all ongoing sources in making determinations (which may include CERCLA ARAR waivers of portions of MTCA and some surface water quality criteria), including inflowing

contaminants from the Green River system, aerial deposition, residual lateral sources, and residual LDW bed loading. Recontamination in this regard will be addressed in the LDW CERCLA/MTCA process. Removal Action levels (RvALs) and backfill levels for final actions as set forth in Section V.4 (EE/CA) below, and explained in greater detail in the EE/CA, for this NTCRA, shall be fully consistent with Plant 2 RCRA cleanup standards, and shall be met throughout the Jorgensen Forge EAA.

2. Actual or potential contamination of drinking water supplies or sensitive ecosystems.

The groundwater beneath the Facility is not potable due to marine tidal intrusion per salinity criteria in WAC 173-340-720(2). Drinking water standards are therefore not appropriate for this NTCRA. Regardless, groundwater was characterized as a potential surface water contamination source for this NTCRA. The migration pathway for discharge of groundwater is complete but concentrations of COCs have not been detected in groundwater exceeding the screening levels, with the exception of single anomalous detections of COCs in groundwater collected from single monitoring wells located in discrete areas of the RAB.

The LDW is a sensitive estuarine ecosystem in which species of salmonids listed as endangered species live as juveniles, along with the full complement of wildlife typical of such systems in urban areas of the Pacific Northwest. Estuarine intertidal and near-shore subtidal ecosystems in the LDW provide important habitat for juvenile salmonid growth, physiological transition, and predator avoidance during their outmigration. The estuarine environment also provides refuge for various marine fish during larval stages and supports an array of preferred prey for all salmonid life stages. The intertidal zone is located approximately between -4 ft and +13 ft MLLW, and the near-shore subtidal zone is just slightly deeper than the intertidal zone.

Within the intertidal areas, mudflats serve many ecosystem functions, including providing food and habitat for benthic invertebrates, fish, shorebirds, and aquatic mammals. A diverse assemblage of invertebrate species, including larvae, worms, and crustaceans, can be found in these habitats, which typically consist of unconsolidated silts and clays and sand flats of unconsolidated sandy sediments. Mudflats containing gravel may support high densities of bivalve populations.

Though limited in area, the features of the Jorgensen Forge EAA intertidal mudflat make the area suitable habitat for the organisms described above and provide potentially important habitat for organisms within the juvenile salmonid food web.

3. High levels of hazardous substances or pollutants in soils largely at or near the surface that may migrate (300.415(b)(2)(iv)).

In general, principal threat wastes (PTW) are those source materials considered to be highly toxic or highly mobile which generally cannot be contained in a reliable manner and/or would present a significant risk to human health or the environment should exposure occur. EPA believes that though certain source materials are addressed best through treatment because of technical limitations to the long-term reliability of containment technologies, or the serious consequences of exposure should a release occur; these expectations also reflect the fact that other source materials can be either safely removed (as at this EAA) or safely contained and that treatment for all waste will not be appropriate or necessary to ensure protection of human health and the environment.

While isolated sediment samples have PCBs and metals detected above levels that might constitute a principal threat, these were generally not collocated and it was not determined that there was an identifiable area that posed a principal threat. Sufficient information was not available for other contaminants to identify the presence of a PTW. In any case, the proposed action would not leave any PCBs in the subsurface above 12 ppm OC-normalized, far below any PTW threshold.

4. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

Contaminants found in the off-shore sediments could migrate or be released in the event of a severe flood and/or significant damage to the upriver Howard Hansen Dam. Presently, surface water from average and above average precipitation events would not impact this NTCRA. The 24-inch storm drain line which could have conveyed significant contamination into the EAA is no longer a concern due to its removal in March 2011 described above.

5. The availability of other appropriate federal or state response mechanisms to respond to the release (300.415(b)(2)(vii)).

No other federal or state response mechanisms are available. It is fully anticipated that Jorgensen will perform the work with EPA oversight pursuant to an EPA administrative order. Other than CERCLA, there are no known other appropriate federal or state response mechanisms capable of providing the appropriate resources in the prompt manner needed to address the potential human health and ecological risks associated with the Jorgensen Forge EAA.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

RvALs are based on the objective of protecting human health and the environment for exposure pathways present throughout the Jorgensen Forge EAA, i.e., sediments and bank. The overall objective has been divided into removal action objectives (RAOs), which are:

Sediment

- **Human health – seafood consumption**. Reduce human health risks associated with the consumption of resident LDW fish and shellfish to protective levels. This RAO is expected to be consistent with the RAO for future remedial actions in the LDW.

- **Human health – direct contact**. Reduce human health risks associated with exposure to COCs through direct contact with sediments and incidental sediment ingestion by reducing sediment concentrations of COCs to protective levels. This RAO is expected to be consistent with the RAO for future remedial actions in the LDW.

- **Ecological health – benthic**. Reduce toxicity to benthic invertebrates by reducing sediment concentrations of COCs to comply with the SMS.

- **Ecological health – seafood consumption**. Reduce risks to crabs, fish, birds and mammals from exposure to COCs by reducing sediment and surface water concentrations of COCs to protective levels.

Groundwater

- **Groundwater and Sediment protection.** Reduce migration of contaminants in groundwater to sediments to reduce risk to human health and the environment.

The removal action will meet these RAOs, with the exception of the RAO for human seafood consumption over the long term. The RBCs necessary to protect unlimited human seafood consumption are very stringent. The goal for the LDW as a whole is to get as close to them as practicable. Achieving them may be impossible as they are more stringent than background concentrations, including natural background as defined by MTCA (see Section III.1 above). However, this sediment removal will remove all contaminant concentrations over its aerial extent and will replace them with clean fill material meeting the backfill levels for final actions. Upon completion therefore, these formerly contaminated sediments will meet all cleanup goals and levels until they are recontaminated, to however marginal a degree, by surrounding LDW concentrations, and LDW sources generally. These later post-NTCRA levels will be addressed by the LDW Record of Decision in a manner consistent with the rest of the LDW since the Jorgensen Forge EAA will remain part of the LDW Site after this NTCRA is completed. It is important to emphasize that protective levels of some COCs, particularly PCBs, are well below background concentrations, so it will be not be possible, based on everything we know at this time, over the long term, to completely eliminate any unacceptable risk from this pathway without limiting fish consumption to some degree.

Through an evaluation of effectiveness, implementability and costs, the proposed action (Alternative 2 in the EE/CA) was selected as the proposed removal action. The selection of this alternative was not revised in response to public comment.

1. Proposed action description

Through an evaluation of effectiveness, implementability and costs, the proposed action (Alternative 4 in the EE/CA) was selected as the proposed removal action. The selection of this alternative was not revised in response to public comment.

The proposed action consists of excavation of the bank and sediments within the EAA exceeding removal action levels (RvALs); backfill of material that meets RBCs to protect finfish and shellfish consumers; storm water management; and long-term sediment and groundwater monitoring to determine that the removal objectives are achieved within the approximately 1.6 acre Jorgensen Forge EAA (Figure 2). The actions include:

- Removal of contaminated sediment and soil with disposal at an off-site commercial disposal facility, followed by backfilling with clean material, as detailed below:

- Dredge approximately 21,000 cubic yards (cy) of contaminated sediment, bank soil, and other debris from EAA (Figure 2). This variable depth dredging (2-10+ feet) will remove all sediments with contaminant concentrations higher than the RvALs for all COCs. Clean backfill material (16,200 cy) that meet RBCs (consistent with Boeing Plant 2 TMCLs) will be placed in the clean dredged prism and be re-contoured to original contours, as appropriate.

- Prior to backfilling, collect confirmation samples on newly exposed surfaces to document the nature of the material beneath the backfilled area. In the sediments dredging will continue until the RvALs are reached.

- Dispose of dredged material in an off-site landfill that meets all state and federal requirements for disposal of such materials.

- Install or construct supporting facilities, staging areas, drainage and erosion controls, and effective decontamination facilities prior to initiation of the NTCRA.

- Water Control Systems.

  - Baseline groundwater monitoring, during and after removal action, is required to demonstrate that the bank action adequately removed contaminants which caused groundwater to exceed RvALs. If groundwater exceedances persist, additional measures will be evaluated.

  - Dewatering of sediments must be monitored to ensure contaminants are not re-introduced into the water column during removal activities.

  - Storm water must be monitored to ensure any water released to the LDW will not result in recontamination of sediments or harmful exposures to benthic organisms.

- Institutional controls. The Washington State Department of Health has issued a fish consumption advisory for the LDW. Further fish consumption advisories, public education programs and/or limitations with respect to the Jorgensen Forge EAA will be re-evaluated in the LDW-wide remedial decision making process.

- Performance of long-term monitoring and reporting. Long-term monitoring and reporting is required to measure initial efficacy and recontamination. A Long-Term Monitoring and Reporting Plan must be developed to specify monitoring activities, including frequencies and protocols. Recontamination from other than Jorgensen Forge sources will be addressed as part of the future long-term monitoring plan for the LDW.

2. Contribution to remedial performance

The Jorgensen Forge EAA NTCRA will remove all contaminated sediments and sources to those sediments above RvALs and replacing them with backfill that meets the backfill levels for final actions as previously stated, within the Jorgensen Forge EAA, a delineated PCB sediment hot spot from the LDW RI. They will thereby eliminate in the short term, and reduce over the long term, exposures to

Jorgensen Forge receptors while fully complementing and contributing to the long-term remediation of the LDW Site pursuant to CERCLA and the NCP.

3. Description of alternative technologies

Candidate technologies for sediment remediation were identified and screened prior to developing alternatives for further engineering analysis, and then further refined to a preferred alternative in EE/CA. General categories of removal action technologies considered at the screening stage included: no action, institutional controls, monitored natural recovery and enhanced natural recovery (MNR/ENR), containment, in-situ treatment, removal and treatment, and removal and disposal. Each of these candidate technologies were evaluated based on effectiveness, implementability, and cost. All technologies except partial contaminant removal/ capping and disposal, as well as full removal and disposal (along with no action for comparative purposes only) were eliminated at the screening stage from further consideration due to lack of sufficient projected efficacy, low expected technical feasibility, and/or excessive comparative cost ineffectiveness, i.e., technologies that were not cost-effective relative to other equally-protective options were also not retained.

4. Engineering Evaluation/Cost Analysis (EE/CA)

The final EE/CA will be approved within 30 days of the issuance of this document once public comments are incorporated and addressed. A 30-day public comment period was held from June 01, 2011 through June 30, 2011, during which 2 comments were received and comments were recorded by a court reporter at the June 16, 2011, public meeting. The EE/CA Responsiveness Summary is Attachment A. Other supporting documentation is found in the project administrative record.

The four active alternatives carried through the EE/CA, along with the no action alternative, differed principally in the amount of sediment contamination left in the EAA upon completion of the NTCRA. The selected remedy removes all contaminated sediment in the EAA above RvALs, and replaces it with clean backfilling material. This will allow all cleanup goals and levels for sediments however stringent, to be met over the aerial extent of the sediment action for the very short term, before any recontamination from surrounding concentrations or sources occurs. However, the sediment RvALs listed below are limited, e.g., for PCBs, to the SQS of the SMS numerical standards (for protection of benthic invertebrates) because: 1) the rate at which PCB levels could rise above the very stringent RBC or background levels is unknown but some recontamination is all but certain to occur; 2) these recontamination levels are not in any case projected to rise above SQS concentrations; and 3) the Jorgensen Forge EAA will remain part of the LDW Site subject to its remedial action decisions with regard to whatever contaminant levels may reoccur.

The rejected active alternatives removed substantially less contaminated sediment and contained all remaining contaminated sediments under an engineered cap (of varying sizes). When consideration of the cost of the fourth alternative that removes and disposes of all EAA contaminated sediments above

RvALs was compared to the cost of removing fewer sediments and designing, building, monitoring, maintaining and assuring an engineered cap, the difference amounted to an approximately 7 percent cost increment. The selection of this action was readily apparent and fully concurred on by the State and the Tribe. This action was also enthusiastically supported by the community as well (see Responsiveness Summary, Attachment A).

RvALs selected in the EE/CA are as follows:

Jorgensen Forge EAA Sediment RvALs and RBCs (for backfill material)

All concentrations in mg/kg (ppm)

Constituent	SQS/RvALs	RBC[1]	Background (S/B)[2]	PQL	Backfill Levels for Final Actions
PCBs[3]	12 ppm OC	0.00006		0.03	0.03
Cadmium	5.1	4	0.77/0.9	na	<5.1
Lead	450	250	24/21.6	na	250
Chromium[4]	260	1.2	none/67.6	na	67.6
Copper	390	80	36/49.9	na	49.9
Mercury[5]	0.41	1.5	0.07/0.2	na	<0.41
Silver	6.1	170	none/0.3	na	<6.1
Zinc	410	1,400	85/94.6	na	<410
Arsenic	51	20	20/13.6	na	13.6

1 - These RBCs (for purposes of comparison) are from the Boeing Plant 2 *Target Media Cleanup Level Technical Memorandum (Boeing, 2011)*

2 - Background values are from the Ecology State-Wide Natural Background for Metals in Soil ("Soil Background ") (October 1994), the "S" column, or from the OSV Bold Study ("Bold Background"), (EPA, 2008) identified in the "B" column

3- SQS values are based on parts per million total organic carbon, whereas the backfill levels for final actions PCB values are based on total PCBs without organic carbon normalization.

4 - The Chromium SQS and RBC values are based on hexavalent chromium, whereas the background are based on tri-valient chromium. This distinction is discussed in depth in the explanation of selection text for chromium.

5 - Mercury values are based on elemental mercury

5. Applicable or relevant and appropriate requirements (ARARs)

SMS numerical standards will be fully complied with. Primary federal ARARs include the Clean Water Act (CWA), particularly Sections 303-304 and 404. Primary State ARARs include MTCA, the SMS and state water quality standards. Some Federal/State water quality criteria/standards for some contaminants and some portions of MTCA (over the long term as described above) may not be met through this action.

Aquatic organisms, including seafood, in water body sites like the LDW (including all its EAAs) are exposed to COCs in the water column, which is part of the areal extent of contamination from releases at or from the site. Many federal water quality criteria and/or state standards are calculated to protect such organisms, either directly as ecologically-based criteria, or to protect human seafood consumers (other water quality criteria or standards are based on drinking water exposures which are not relevant to the LDW, a marine estuary). Water quality is improved by removing sources of COCs to the water by actions like the sediment action selected in this Action Memorandum. Improvement in water quality in localized areas following source removal can be dramatic.

The actions selected in this Action Memorandum will improve water quality in the LDW to an unknown degree, likely most demonstrably within the EAA and areas in its immediate proximity. Monitoring water quality with the legal standards as the goal to the extent practicable is fully consistent with CERCLA and the NCP, especially since this NTCRA constitutes "early action" that would otherwise be taken later as remedial action. This temporal distinction provides no basis for an alternate standard regarding promulgated requirements, since the only distinguishing legal feature of the early action standard is that it is merely to the extent practicable. Early actions and subsequent remedial actions at an NPL site should have the same goals and standards before them. Having such consistency does not prolong, extend, alter or harm the early action or subsequent remedial action, To the extent that water quality criteria or standards or any other ARARs, including portions of MTCA, prove unachievable at the LDW Site, including its EAAs, they may be subject to waiver pursuant to Section 121(d)(4) of CERCLA prior to completion of LDW remedial action.

Sediment removal standards (RvALs) have been developed based primarily on the SMS in a manner consistent with many CERCLA removal and remedial actions in Washington over at least the last decade. The SMS are part of MTCA (when they are employed to address contaminated sediments at CERCLA or MTCA sites, and prescribe numerical criteria for the protection of benthic invertebrate organisms), and may function independently for other applications, In-water dredging and filling shall comply with regulation pursuant to Section 404 of the CWA.

EPA will prepare a Biological Assessment that evaluates the potential effects on threatened and endangered species from this NTCRA, along with an evaluation of Essential Fish Habitat (EFH), and will consult with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (FWS) (together, the "Services") and obtain a Biological Opinion prior to NTCRA implementation, particularly with respect to the taking of listed fish (NMFS has jurisdiction over commercial fisheries and FWS has jurisdiction over sport fisheries; salmon among other species are both commercial and sport species).

Off-site activities will comply with all applicable local, state, and federal laws, including the Off-Site Disposal Rule (40 CFR 300.440).

6. Project schedule

The project schedule for is anticipated to be set forth in the anticipated enforcement order on consent (Statement of Work) issued to Jorgensen for this NTCRA. The construction phase of this project is currently scheduled for September 2012 through December 2013.

B. Estimated Costs

The projected costs to implement this NTCRA are estimated at $7.09 million (see Section 7.3 of the EE/CA).

EPA estimated costs per this Action Memorandum are anticipated only for costs associated with oversight of work performed by the PRPs. This work includes, but is not limited to, review and comments on required deliverables, field oversight of work, and other EPA responsibilities with respect to implementation of this removal action. If EPA were to undertake implementation of the work described in this Action Memorandum, with its own resources, an Action Memorandum Amendment

and cost Ceiling Increase would be required. Oversight funds will be recovered jointly from the Jorgensen Forge Corporation and Earle M. Jorgensen, Inc.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If the proposed removal action should be delayed or not taken, hazardous substances will remain as potential human health and ecological threats, and hazardous substances will remain a continuing source of solid and dissolved-phase contaminants to the environment until the remedial action for LDW is selected and implemented.

VII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues at this site.

VIII. COMMUNITY RELATIONS

Throughout the development of the EE/CA, and the development of the completed LDW RI and ongoing FS, EPA has provided access to any and all interested persons to all draft and final submissions under the Jorgensen Forge EE/CA and LDW RI/FS Orders on Consent, on one or more sponsored websites, and has held regular briefings with stakeholders at numerous key points in the process. EPA also consulted with the community, formally and informally, with and without the Duwamish River Cleanup Coalition (DRCC), EPA's Technical Advisory Group (TAG) for the LDW site.

The EE/CA was available for public review and comment from June 1 through June 30, 2011. Notice of this comment period was published in the *West Seattle Herald, South Seattle Beacon* and *Highline Times* at the start of the 30-day public comment period. Notice of the comment period, public meeting, and a summary of the proposed EE/CA alternatives were described in a Jorgensen Forge Fact Sheet (May 2011) and mailed to addresses in the zip codes in South Park and neighboring Georgetown. Fact sheets in Spanish were also distributed. Announcements were placed on EPA's website, the EPA web calendar, the City of Seattle Neighborhoods web calendars, and on the South Park, West Seattle, and Georgetown blogs and listservs.

EPA provided information about the comment period, public meeting, and EE/CA at several community events and neighborhood meetings, primarily at the South Park and Georgetown Neighborhood Association monthly meetings from January through May. Fliers announcing the public meeting in English and Spanish were distributed in the immediate Jorgensen Forge neighborhood.

Public outreach was also performed by DRCC-TAG. EPA included DRCC-TAG's public meeting flier in English and Spanish in EPA's Jorgensen Forge Fact Sheet mailing. EPA held a public meeting in the South Park neighborhood on June 16, 2011, attended by approximately 50 people. Public comments were recorded by a court reporter. EPA also received 4 comment letters and comment forms during the public comment period, and 4 individuals provided spoken comment at the public meeting. Responses to all significant comments are provided in the Responsiveness Summary (Attachment A).

An Administrative Record was prepared for this action and notice of availability of that record was published in the above-referenced newspapers and the Superfund Fact Sheet. The Administrative Record

was available at EPA, and copies of key documents were made available at the South Park Library which is an information repository, at the Region 10 EPA HQ Library, and on the EPA Region 10 Jorgensen Forge website and via CD-ROM.

IX. ENFORCEMENT

It is anticipated that this removal action will be implemented by Jorgensen pursuant to an enforcement Order on Consent. If a consent order were to prove unachievable for any reason, EPA would likely issue a unilateral order. Alternatively, EPA could include this action as part of the LDW ROD if action has not been taken by that time. In any case the LDW ROD will acknowledge this EAA when that ROD issued, and the EAA will remain a part of the LDW Site.

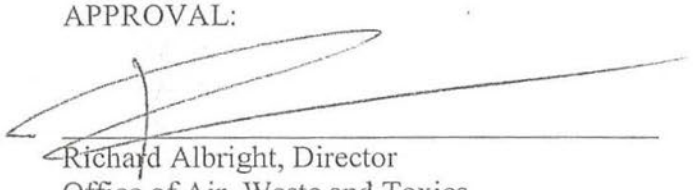
X. RECOMMENDATION

This decision document sets forth the selected removal action for the Jorgensen Forge EAA of the LDW Superfund Site, Tukwila, King County, Washington, that has been developed in accordance with CERCLA, and is consistent with the NCP. This decision is based on the administrative record for the EAA and the Site.

Conditions at the EAA meet the NCP 40 C.F.R. § 300.415(b) criteria for a removal action and I recommend your approval of the proposed removal action. The proposed removal action is expected to be conducted by the PRPs with oversight by EPA.

IX. APPROVAL/DISAPPROVAL

APPROVAL:



Richard Albright, Director
Office of Air, Waste and Toxics

30 Sept 2011
Date

DISAPPROVAL:

_____
Richard Albright, Director
Office of Air Waste and Toxics

_____
Date

FIGURES

1. Site Location Map

2. Jorgensen Forge facility and RAB

ATTACHMENT

1. Responsiveness Summary (Response to Comments)

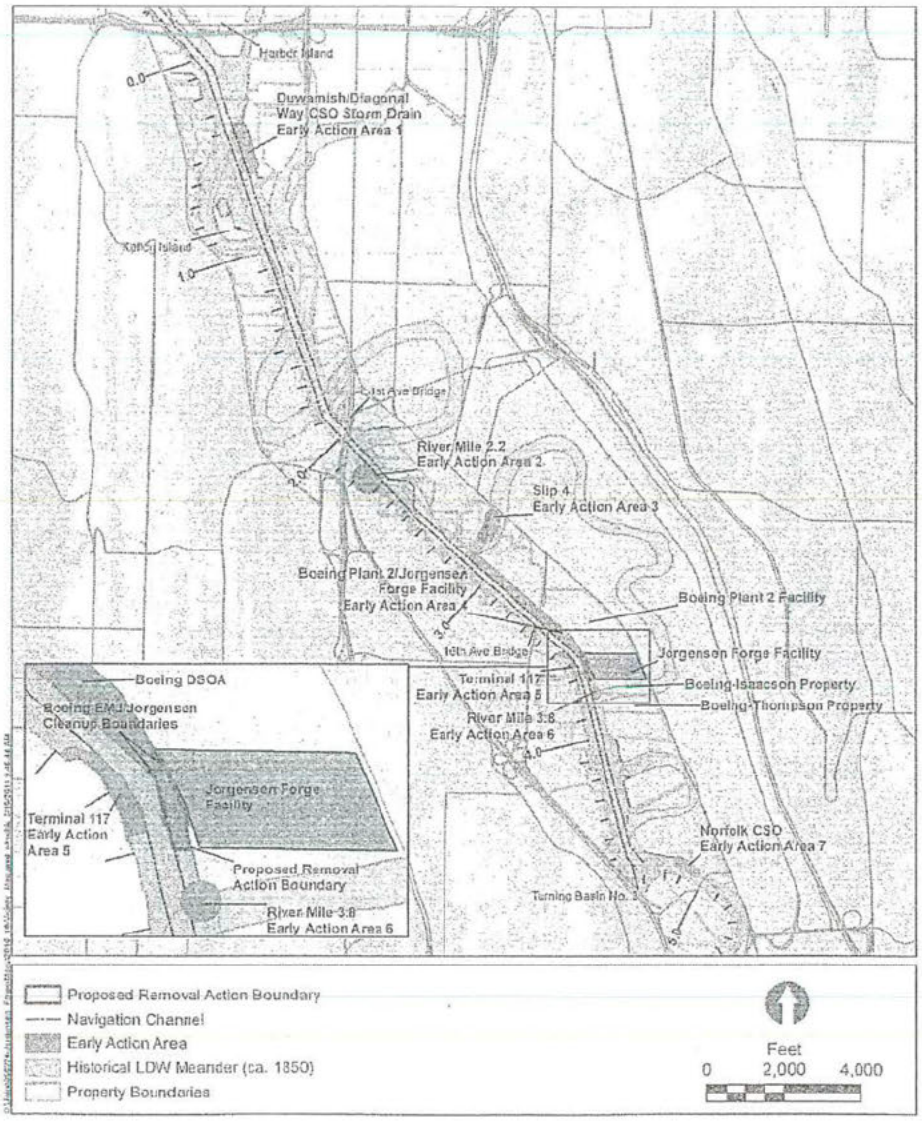

Harbor Island
Duwamish/Diagonal Way CSO Storm Drain Early Action Area 1
Kellogg Island
1st Ave Bridge
River Mile 2.2 Early Action Area 2
Slip 4 Early Action Area 3
Boeing Plant 2/Jorgensen Forge Facility Early Action Area 4
Boeing Plant 2 Facility
16th Ave Bridge
Jorgensen Forge Facility
Terminal 117 Early Action Area 5
Boeing-Isaacson Property
Boeing-Thompson Property
River Mile 3.8 Early Action Area 6
Norfolk CSO Early Action Area 7
Turning Basin No. 3
Boeing DSOA
Boeing EMI/Jorgensen Cleanup Boundaries
Jorgensen Forge Facility
Terminal 117 Early Action Area 5
Proposed Removal Action Boundary
River Mile 3.8 Early Action Area 6
Proposed Removal Action Boundary
Navigation Channel
Early Action Area
Historical LDW Meander (ca. 1850)
Property Boundaries
Feet
0
2,000
4,000

Figure 1

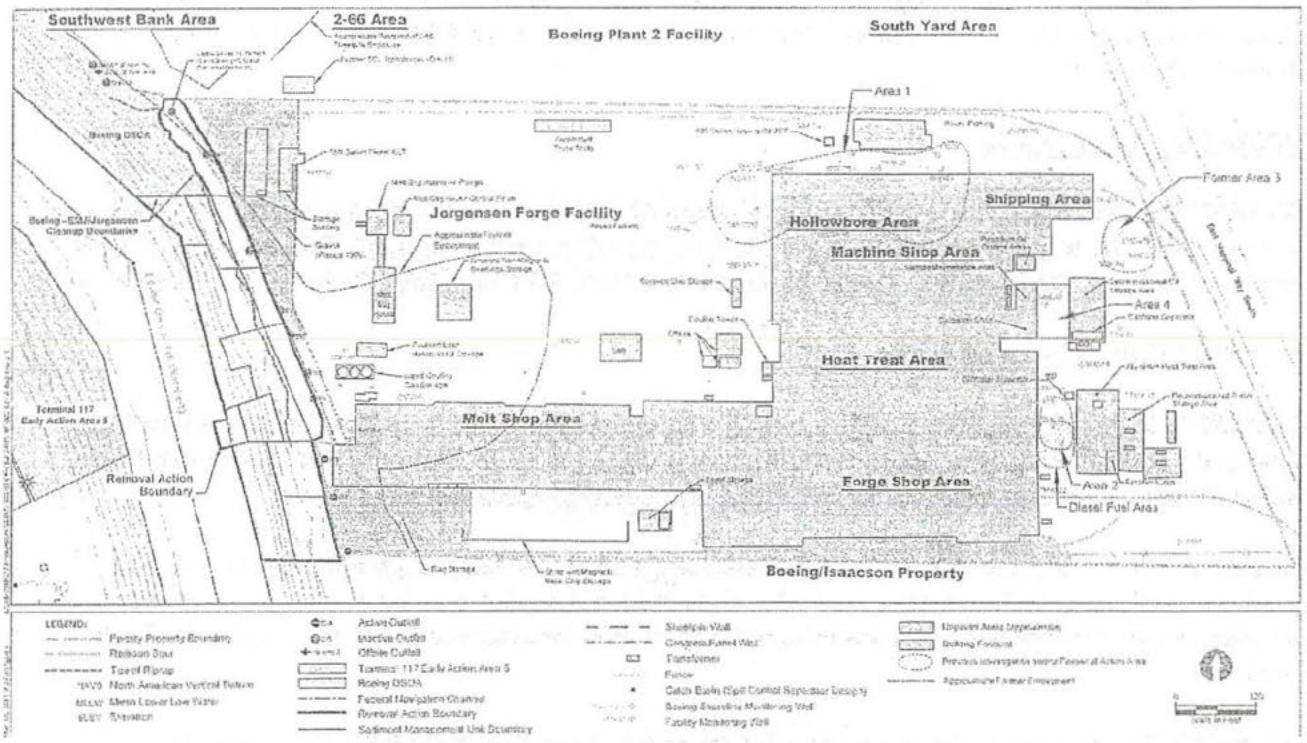

Southwest Bank Area
2-66 Area
Boeing Plant 2 Facility
South Yard Area
Area 1
Former Area 3
Shipping Area
Jorgensen Forge Facility
Hollowbore Area
Machine Shop Area
Area 4
Heat Treat Area
Melt Shop Area
Forge Shop Area
Area 2
Diesel Fuel Area
Terminal 117 Early Action Area 5
Removal Action Boundary
Boeing/Isaacson Property
LEGEND:

Figure 2

ATTACHMENT A

RESPONSE TO COMMENTS

Below are the comments received by the EPA during the public comment period on the Engineering Evaluation/Cost Analysis for the Jorgensen Forge Early Action Area. Included with each comment is EPA's response. The comments are divided into two categories - summary comments and specific comments. Summary comments represent those similar comments received by multiple entities where multiple parties provided the same input. Specific comments are those EPA believes should be addressed individually.

SUMMARY COMMENTS

COMMENT 1: Paraphrase "We support the selection of Alternative 4 for the Jorgensen Forge sediment removal action". Duwamish River Cleanup Coalition, the Muckleshoot Indian Tribe, People for Puget Sound, (b) (6), Georgetown, (b) (6), South Park, (b) (6), Seattle, (b) (6).

EPA RESPONSE: Comment noted.

COMMENT 2: Paraphrase "We/I are concerned with the possibility of suspended sediments moving around and contaminating other areas of the waterway during the remediation". The Duwamish River Cleanup Coalition, the Muckleshoot Indian Tribe, (b) (6), Seattle.

EPA RESPONSE: EPA recognizes the possibility suspended sediment migration and will require aggressive monitoring before, during, and after construction, coupled with best management practices and cutting edge technologies to ensure minimal impact to sediments outside of the Jorgensen Forge boundaries.

COMMENT 3: Paraphrase "Source control for the entire Duwamish and Green River must be completed to ensure that remedies downstream are not recontaminated." The Duwamish River Cleanup Coalition, the Muckleshoot Indian Tribe, (b) (6), Seattle.

EPA RESPONSE: Source control for the Duwamish and Green River is being performed by the Washington State Department of Ecology as the lead agency.

COMMENT 4: Paraphrase "The technologies to be used in the cleanup must be better identified and explained to the public in more detail to ensure it is the best available technology. This information should be part of the Engineering Evaluation/ Cost Analysis ("EE/CA")". The Duwamish River Cleanup Coalition, the Muckleshoot Indian Tribe, (b) (6), Seattle.

EPA RESPONSE: EPA agrees that more specificity regarding the technologies to be used will better facilitate public understanding. To that end, a new section was added to the EE/CA and a presentation by Jorgensen Forge and Boeing was provided to the stakeholders.

SPECIFIC COMMENTS

COMMENT 1

" Hello,

As an interested party studying the Duwamish River Cleanup from the perspective of a landscape architecture student, I hope to see the Jorgenson Forge cleanup have stringent cleanup standards that have the smallest footprint possible. I think that the plan should incorporate options for locally dealing with contamination as much as possible, rather than sending it to another site in Central Washington, and think about future land uses while cleanup is beginning, to get the most out of taxpayer and responsible party dollars. Thank you for your time and consideration.

Best,

(b) (6) "

EPA RESPONSE: Thank you for your comment. Due to the variety of contaminants present in the sediments to be dredged, including PCBs, local disposal is not an option. PCBs at these levels can only be placed in an approved landfill or incinerated. Incineration is not practicable since the nearest facility that can thermally treat PCBs is located in Utah. The treated materials would not be able to be reused at the Facility due to physical limitations. EPA believes disposal in an approved landfill will result in an equally protective cleanup at a reduced cost.

COMMENT 2

Email:
Subject: Duwamish River Superfund Site: Jorgensen Forge
6/29/2011

Shawn Blocker
US EPA Region 10

I believe that the way that Seattle manages the places where our waters and shores meet is tied to our City's future, the health of its habitants and the long term strength of its economy -- and that clean water and a healthy environment will be the two most important factors in determining long term livability and economic stability for our area and our nation.

The EPA's Jorgensen Forge Clean Up Alternative 4 appears to be the best alternative for achieving the goal of protecting life in the river and citizens fishing for food there -- I support it.

Care should be taken to evaluate the Jorgensen site and all future sites around the Duwamish to ensure that the best possible available technology for sediment removal and related work is used in order to

minimize health impacts on the surrounding community during clean-up.

Protecting the investment we are making in cleaning the Duwamish River is essential. Cooperation at all levels of government is needed here. Upriver pollution sources, continuing as they are, will likely damage the people's investment in clean-up. A system of reduction, control and monitoring of pollutants entering the lower Duwamish from upstream must be included in the River-wide clean-up plan if long term success is our goal.

Thank you for all your work on our behalf,

(b) (6)

Georgetown, Seattle

EPA RESPONSE: Comment noted the Washington State Department of Ecology is the lead agency for source control. Coordination between EPA and other interested parties and government entities will continue in the future. .

COMMENT 3

Paraphrase: "will there be air monitoring during the construction and will there be a notice to mariners to ensure the safety of ship traffic during the removal action?"

(b) (6), South Park Resident

EPA RESPONSE: The answer is "yes" to both. A full description of the air monitoring program will be included in the NTCRA Work Plan (the next formal submittal by Jorgensen) to be issued in the winter of 2011 or spring of 2012 and will be available for public review.

COMMENT 4

"The JF EE/CA lacks an executive summary. Executive Summaries are recommended in EPA's Fact sheet entitled "Conducting Non-Time-Critical Removal Actions under CERCLA (EPA/540/F-94/009)" because they provide a general overview of the contents of the EE/CA and makes the EE/CA more accessible for the public to review. The public and Environmental Justice communities are put at a disadvantage in reviewing the Draft EE/CA because of the absence of an Executive Summary. DRCC/TAG requests that an Executive Summary be prepared for the final JF EE/CA, and that all other Lower Duwamish Waterway Early Action and riverwide cleanup documents include an Executive Summary."

Duwamish River Cleanup Coalition

EPA RESPONSE: Comment noted. Though executive summaries are recommended, they are not required and were not part of the Statement of Work for this Order, and therefore will not be included in this instance. Extensive community involvement was performed prior to the issuance of the EE/CA, with EPA presenting summaries of the proposals to community groups in Georgetown and South Park.

COMMENT 5

"Institutional controls (ICs) are inadequately addressed in the EE/CA. Fishing advisories alone are not sufficient as institutional controls to protect human health during this early action. The Duwamish River fishing populations are environmental justice communities, comprised of tribal, low income/ homeless, and immigrant communities who rely on the river both for subsistence and maintaining fishing-related family and cultural traditions. The JF EE/CA needs to incorporate, at a *minimum*, ICs comparable to those being developed for the larger LDW Superfund Site, as reflected in EPA's, DRCC/TAG's, and the Muckleshoot and Suquamish Tribe's comments on LDWG's Draft FS. EPA's IC Guidance document (November 2010) recommends that an Institutional Control Implementation and Assurance Plan (ICIAP) be developed as early as possible for both early action cleanups and site-wide cleanup plans. DRCC/TAG supports this recommendation and requests that an ICIAP be developed, with public review, for JF, as well as for T-117 and Boeing Plant 2."

Duwamish River Cleanup Coalition

EPA RESPONSE: EPA agrees that Fish advisories alone are not sufficient as the sole institutional control. Specific institutional controls will be contained in the NTCRA Work Plan which will be available for stakeholder review. An Institutional Control Implementation and Assurance Plan (ICIAP) was be prepared as part of the NTCRA Work Plan. Future IC's may be applied as part of the larger LDW Superfund Site.

COMMENT 6

"NPDES permits often exceed water quality standards (WQS); JF's NPDES permits are no exception. We are pleased to hear that JF has agreed to install technology onsite to assist with the attainment of WQS for the Superfund Site. JF's NPDES discharge permit should be revised immediately to reflect this new requirement".

Duwamish River Cleanup Coalition

EPA RESPONSE: EPA understands that The Washington State Department of Ecology is currently revising the permit.

COMMENT 7

"The remedial design should specify that the clean backfill will be "certified PCB-free," have metals concentrations less than or equal to natural background concentrations. The protectiveness of the selected corrective action is largely due to the clean backfill replacing the excavated sediments. This specification for the backfill is also important for detecting any recontamination of the sediments onsite."

Duwamish River Cleanup Coalition

EPA RESPONSE: As stated in the EE/CA, PCB concentrations in the backfill material will not exceed the natural background value of 0.002 parts per million of PCBs. Metals concentrations will not exceed

the risk based calculations contained in the Boeing Plant 2 Target Media Cleanup Level Technical Memorandum (Boeing 2010) or the natural background values, whichever is less restrictive.

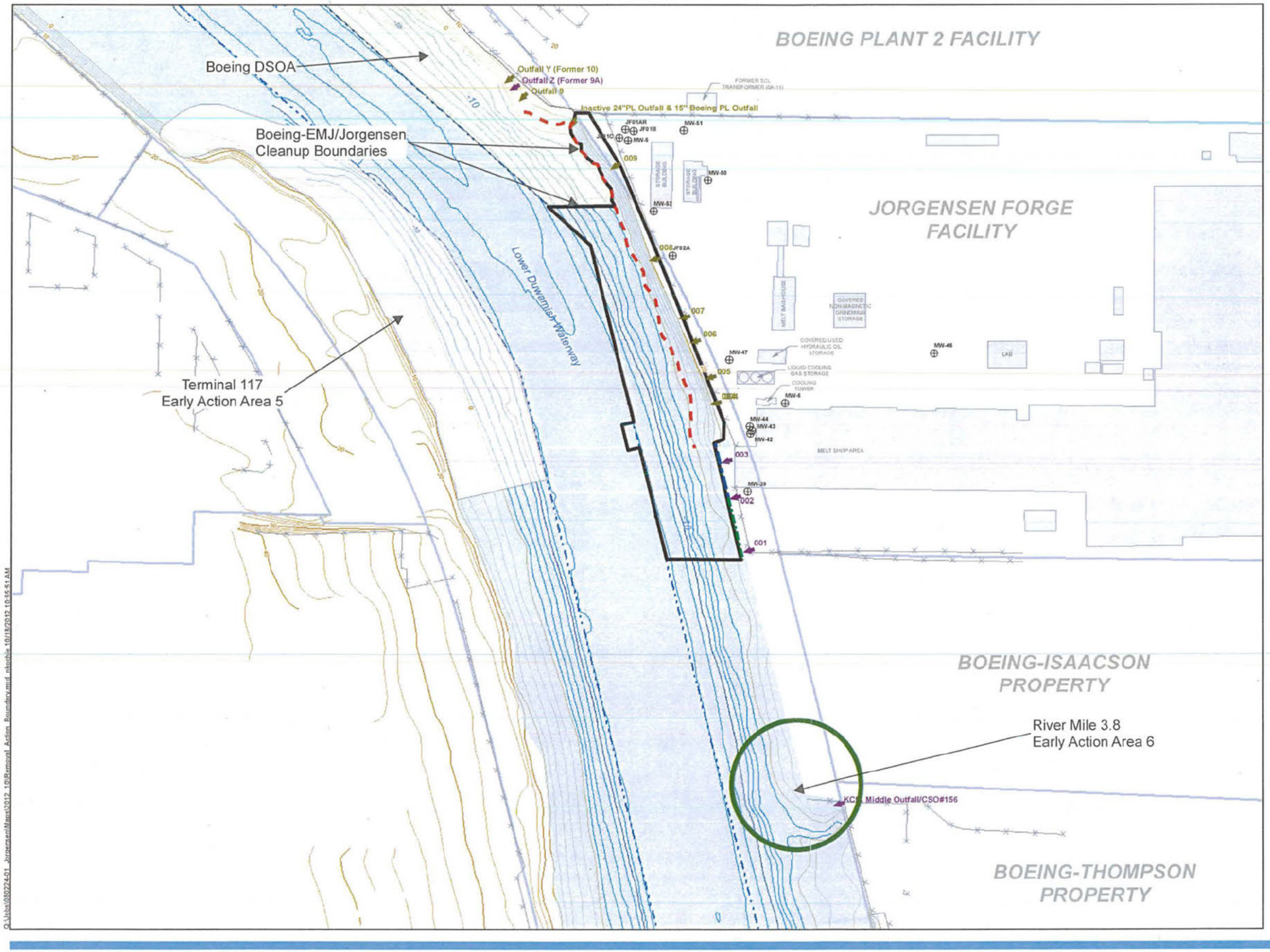
COMMENT 8

"Appropriate consideration should be given to the selection of a disposal facility for contaminated soil and dredge spoils to ensure that the contamination is not transferred from one community to another. Local options for disposal and treatment need to be considered and publicly reviewed in order to prevent or minimize the transference of contaminated materials to another location".

Duwamish River Cleanup Coalition

EPA RESPONSE: See response to specific comment #1.

Appendix D



LEGEND

- Groundwater Monitoring Well
- Active Outfall
- Inactive Outfall
- Toe of Riprap
- Sheetpile Wall
- Concrete Panel Wall
- Fences
- Federal Navigation Channel
- Removal Action Boundary
- Property Boundaries
- Boeing DSOA
- Terminal 117 Early Action Area 5 Boundary

NOTES:

1. Bathymetry surveyed by Lower Duwamish Waterway Group (August 2003).

2. Outfall locations field identified on May 14, 2003.

3. The toe of the riprap slope, inactive 24-inch and 15-inch Boeing property line outfalls were surveyed during a low tide on August 28, 2008.

4. The Boeing-EMJ/Jorgensen cleanup boundaries is identified in the Memorandum of Understanding between Boeing and EMJ/Jorgensen Forge, dated August 2007 (EMJ et al. 2007).

Feet
0 80 160 240 320

Q:\Jobs\080224.01_JorgensenMaps\2012_10\Removal_Action_Boundary.mxd nlechle 10/18/2012 10:55:51 AM

ANCHOR QEA

Figure 1
Jorgensen Forge EAA Removal Action Boundary
Statement of Work

Appendix E:

Access to Jorgensen Forge Company Property

To comply with Jorgensen's contracts with the U.S. Navy, U.S. Navy suppliers and other defense-related firms:

1. All visitors must be authorized to enter the Jorgensen Forge facility and must check in with security personnel at the main gate. The main gate is normally staffed 24 hours a day, 365 days per year. To arrange access under normal circumstances, contact Environmental Director John Gross at (206) 965-1352 or his designee. If necessary, in emergency circumstances, access after normal working hours of 7am to 4pm, on weekends or holidays can be arranged with reasonable advance notice or by contacting (206) 762-1100 extension 269, which is a 24-hour access line staffed by personnel with authority to grant access to EPA in such circumstances.

2. Non-U.S. Citizens must be escorted at all times.

3. All visitors must obtain Visitor Badge from security personnel at the main gate.

4. Upon access, all visitors must obtain a safety briefing.

5. During access, all visitors must wear appropriate safety equipment.